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House at Corby.....Messrs. Gotch & Saunders, Architects.
Old Manor Houses (Illustrations to Paper at the Architectural Association).....From Photographs.

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Sea Defences:

NEW subjects possess greater fascination than the study of the sea and its action upon the land rising above the water and lying buried beneath its surface. The subject is particularly interesting to the inhabitants of countries whose shores are continually exposed to the erosive action which the intrinsically harmless water exercises under the compelling influences of tide and wind. Such action is of all-absorbing interest to small nations whose fatherland consists largely of friable material lying little above or even below high water level. Then the construction and care of coast protection works assumes national importance, and the first line of defence is not a powerful navy, but a stable sea wall, or beach.

Many parts of our coast are quite capable of holding their own, while others are very susceptible to hostile influences, and the owners of property on the sea-board witness the gradual diminution of their possessions with anything but equanimity. In places where the value of land has reached high figures owing to the growth of fishing hamlets and villages into flourishing towns, more or less efficient defensive works can be inaugurated. But in agricultural districts along the coast the value of land is too small to justify anything but the most modest expenditure from the standpoint of the owner who is in the front line of battle.

Notwithstanding the widely diverging conditions that prevail on different stretches of coast, two facts stand out prominently, that the sea attacks the land by waves and by currents. Waves arising in their fury may tear down and break through the obstacles raised by man, but acting alone upon a natural shore they do comparatively little harm, and tend to build up banks of sand and shingle, thus conserving rather than destroying the land. Currents, on the other hand, working stealthily and without bluster, continually remove material in deep water and eat away the foundations of cliffs and beaches. Then comes the turn of the waves to work swift destruction. This accomplished, the currents carry away the debris and prevent the ground swell from making repentant amends by building up foot-banks to protect the coast-line. Hence, as Baron Siccama pointed out in a paper read at the last meeting of the Civil and Mechanical Engineers' Society, the problem of defending the dry land against the inroads of the sea resolves itself into two parts: first, to prevent the surf from eroding the dry land; second, to lead the current away from the coast-line. The means suitable for the attainment of these objects vary considerably in accordance with the power of the waves, the trend and force of the currents, and the tidal range. To discuss in any adequate manner the various appropriate solutions for the difficult problems arising out of different combinations of these forces and conditions would be impossible within the brief limits of a single paper. Recognising this, Baron Siccama confines his attention chiefly to types of sea defences suitable for places where moderate forces have to be encountered, and which can be constructed at comparatively small cost. The systems of construction described are those largely adopted on the Dutch coasts and estuaries, and upon which the author's experience fully entitles him to speak with authority. For sufficiently obvious reasons masonry sea walls are out of the question for the protection of agricultural land, and since the advent of the *teredo navalis* in Northern waters the utility of timbering has been seriously impaired, even in places where its cost is not prohibitive. Thus we are told that the timber piles formerly holding up the sea dams on the Zuiderzee were everywhere destroyed by the teredo: "and the sea broke the then defenceless dykes, flooding the country."

An alternative method of construction is offered by the use of branches and twigs in the way first shown to man by that ingenious animal the beaver. Ages back the banks of islands in the deltas of the Euphrates and the Tigris were reinforced with branches of trees, and Baron Siccama shows that the same modest building material enters largely into the construction of dams and dykes in the low levels of Holland. For light embankments where no heavy surf is to be feared the ground is first covered with a layer of puddled clay, over which straw and tree branches are laid and

pegged down, the whole matting being overlaid with riprap or brick. In works of heavier character use is made of long fascines, locally described as "wispen," built up of branches, and firmly bound with osiers to form a compact bundle from 12 in. to 16 in. circumference, and of any required length. To cover the slope of a newly-made bank the wisps are laid close together in the direction of the slope, sometimes upon a matting of loose branches, held down by stakes. Heavy stone pitching completes the embankment, and, if the fall of the slope requires it, one or two rows of piles are driven to prevent the stones from sliding down.

Where the foot of the dam is never quite dry, the wisps are laid together in the form of a raft comprising two tiers, one transverse and the other longitudinal, secured at crossings by osier bands and hurdles. The raft, locally known as a "ryzen bed," or osier bed, is made on level ground, and, having been floated to the intended site, is adjusted in position, where it is held by stakes or warps. Stone or ballast is then deposited to sink the raft equally and to form a protective covering. This method is suitable only in places where the sea is sufficiently calm to permit the application of the raft without danger of disturbance before it can be fixed. If rougher waves have to be reckoned upon the rafts are much stronger, being often 600 ft. long by 50 ft. wide, and made up of six tiers, all strongly tied and pegged together, and overlaid with stout hurdles. Having been towed to the site, the raft is loaded at the centre until that part begins to sink. Stones are then laid along the edges until the whole bed is grounded. Other beds are sunk on the top, breaking joint with those preceding, and diminishing in width to above low water, when the rest of the work is made up to the required level.

Of course, the durability of the branches and twigs depends very much upon the degree to which they are exposed to weather and the action of sea-water. In process of time the vegetable materials begin to decay, causing considerable settlement, which the author has found to be gradual and easily dealt with. On the landward side of an embankment the rooting and growth of the stakes forms a valuable permanent protection, and on the sea side the branches are said to be very often replaced by silt or sand, and the covering stones to be overgrown with cockles and mussels, which bind them together. The holes left by decayed piles are filled with stone, and the whole construction becomes more permanent, requiring only occasional repairs. On the sea dams of the Zealand islands, Baron Siccama says that much use is made of straw, spread in the direction of the slope, and held down by tough wisps of the same material to form a matting, which above high-water line gives sufficient protection against the wash of waves against the slope.

The foregoing are very simple and inexpensive methods which might be employed with advantage in some parts of England where the force of the waves is moderate, and where partial protection is afforded by outlying banks of shingle or sand. In places exposed to the full force of heavy seas they would be perfectly useless.

As regards defence against erosive currents by keeping them away from natural banks and cliffs, or artificial defences, there is nothing better than a well-designed system of groynes. We are glad to say that the folly of building high and massive groynes has been fully recognised by engineers in this country. Low groynes extending above high-water mark and beyond low-water mark are being used with manifest success in numerous places, and it seems likely that concrete-steel will prove to be a valuable substitute for timber in the construction of such defences.

In Holland osier work is largely applied in building groynes intended to prevent the currents from scouring continuous channels parallel to the coast and to assist the waves in pushing sand towards the beach. But it should be pointed out that the usual form of cross section, practically identical with that favoured on the Belgian coast, is not calculated to collect drifting material in the manner aimed at by English engineers.

The Dutch groynes described and illustrated by Baron Siccama are about 600 ft. long from high-water line, 18 ft. to 20 ft. wide, and spaced 900 ft. apart. At the centre they are about 2 ft. above beach level, and at the sides flush with it. As far as low-water line they are laid in a trench upon a basis of reeds and branches, held down by hurdles. Then comes a covering of gravel or riprap, and on top a carefully-packed course of flat stones. Below the low-water line the stone covering rests upon a light osier bed, while piles are driven along the sides and down the centre. Stones are tipped between the piles, and the growth of seaweed finally completes the structure.

While the paper to which we refer deals with only one phase of a huge subject, it is a distinctly valuable contribution, and the account given by the author of simple methods adopted by a small and by no means wealthy people for the protection of their land should have the effect of stimulating the flagging energies of English landowners. At present the tendency of this class—except in urban districts—is to do nothing but cry out for Government aid, which we do not believe will be forthcoming, notwithstanding the admitted need for the centralised control and regulation of coast protection works, and especially for stringent laws prohibiting the removal of beach material and its unfair accumulation by rich corporations to the detriment of neighbouring communities and individuals.

CONGREGATIONAL SCHOOL HALL, HAILSHAM.—A school hall has been opened by the Congregationalist community at Hailsham. The building is of red brick and stone, and provides accommodation for 300 people. The designs were prepared by Mr. F. J. Rayner, of Newhaven, and the work was executed by Mr. T. Rich, of Hailsham, at a cost of about 1,800*l*.

WORKMEN'S HOTEL, BELFAST.—The new hotel for working men which has just been established by the Salvation Army in Victoria-chambers, Victoria-street, was opened a short time ago by Sir James Henderson. The building has been reconstructed by Mr. R. Ewing, from the designs of Messrs. Browne Brothers, architects; and the other contractors included—Messrs. J. Lowden & Co., plumbing work; Messrs. Moorwood & Sons, Sheffield, heating and cooking appliances; Mr. W. Mellor, tiling and terrazzo work; Messrs. John Currie & Co., hardware and ironmongery and Mr. R. J. M'Kinney, cubicles, etc.

THE ARCHITECTS' LIBRARY.

THE above heading has been adopted as the general classification of what promises to be a valuable series of new works on the history and æsthetics of architecture, the first volume of which has just appeared under the title, "A History of Architectural Development."* This is the first volume of a book by Professor Simpson, to be completed in three volumes. The present volume deals with the development of architecture from the earliest Egyptian period to 1000 A.D.; the second is to deal with Romanesque and Mediæval architecture throughout Europe; the third with the architecture of the Renaissance. Under the same general heading, "The Architects' Library," the publishers announce also the appearance at an early date of a work in two volumes, by Professor Beresford Pite, on "Building Construction." To produce a series of books by competent writers which are to form a kind of specialised "architects' library" is a spirited undertaking, and we shall naturally look with interest to its continuation in the further publications which are said to be in contemplation but are not yet specially announced.

We take it that the object of this series of publications is not so much to give new information or new theories on architecture as to co-ordinate, in a comprehensive and convenient form, the outlines of the existing knowledge on this great subject. That at least appears to be the scope of Professor Simpson's first volume. He does not, we suppose, claim to be bringing anything new before us; but he has produced a book which is exceedingly valuable as a work for students entering on the subject, and which should also be useful to non-professional readers who wish to have an intelligent knowledge of architecture, as he has brought together information some of which is not to be found in any one book upon architecture; and though the book has not the comprehensive analysis of Fergusson's great history, it has on the other hand the advantage that it is more fully illustrated, and that the illustrations deal more fully with the constructive details of architecture. Moreover, it is what we may call an exceedingly sane book; no eccentric or doubtful theories are brought forward, and the critical remarks introduced—sometimes at variance with the most generally received ideas—are thoughtful and rational, and such as a reader may very well take into consideration even if he is not disposed entirely to agree with them. Moreover, the importance of construction and material as influencing architectural style is duly enforced throughout.

The account of Egyptian architecture is clear and well illustrated. The author adopts and illustrates M. Choisy's theory of the use of the "rocker" as a means of raising the large stones, which is so well worked out and expounded by the eminent French writer that it seems to be generally agreed to accept it, and we will admit that it explains something

*"A History of Architectural Development." In three volumes. Vol I. By F. M. Simpson, Professor of Architecture, University College, London. London: Longmans, Green, & Co. 1905.

for which no other explanation is forthcoming; but it is as well to remember that, after all, it is only a deduction, and can only be regarded as probable, not as proven. We agree with the author that the idea of the Beni-Hasan columns having given the suggestion of the Doric column, formerly a favourite point in architectural text-books, may as well be abandoned. The example is too early, too isolated, and too much wiped out afterwards by the almost universal prevalence of the lotus-headed column in one or other of its forms, to allow one logically to suppose that the Greeks picked out that incident from Egyptian architecture to work upon. The process of development of a square stone column into an octagon and thence into a polygon, and thence to the hollowing of the faces to emphasise the angle, is after all a very natural one, and it is probable enough that in archaic Greece it was started also, only that the Greeks worked it out to an architectural result and the Egyptians did not. The one point which we quarrel with in the Egyptian chapter is a negative and not a positive one, and it is common to nearly all writers on architecture, viz.: the omission to point out the essentially inferior and non-intellectual character of the Egyptian order as compared with the Greek. Of the sublimity of the general conception of the temples, with their forests of columns and their dim lighting from above, too much could not be said; but writers on Egyptian architecture seem so impressed with these characteristics that they forget the shortcomings of Egyptian architecture in detail. Between the bulky round Egyptian column, painted all over and terminated by a colossal imitation of a flower or a bud, and the severely thought-out detail of the Greek-Doric column, there is an absolute gulf intellectually; in this respect the Egyptians were children as compared with the Greeks; and in any book which deals at all with æsthetics of architecture this point ought to be emphasised.

In treating of Greek architecture the author touches on the subject of scale, and how in the Greek order "the size of a building makes no difference in its proportions and in the number of its parts"—instancing the comparison of the Parthenon with the Theseum. It is a very curious point this apparent indifference of the Greek architects to any alteration of the scale of parts in altering the scale of the building. Professor Simpson observes that "in no other style of architecture could this arrangement be applied with any chance of success. . . . Westminster Abbey a quarter full size would be a toy"; but he does not make any suggestion as to the reason of this. The conclusion must not be pushed too far either; look at the miniature Doric columns in the balustrade of the British Museum, how feeble and misplaced they appear. Would the Greeks have ever made use of the Doric column on that small scale, and for a mere balustrade? It does not seem likely, and we have certainly no instance of it. If not, there must be some limit beyond which this reduction of scale with satisfactory effect does not apply.

In relation to the once vexed question of the wooden origin of Doric architecture, the author dismisses it with costs; rather too summarily perhaps. We do not quite understand the point of his remark about the Lycian rock-cut tombs which imitate carpentry—that they are not buildings but only carvings. That is true enough; but they show that at an early period people who had constructed in carpentry thought it worth while to imitate its forms in stone-cutting, and they would have been just as likely to do so in building with separate stones. We consider any idea of the wooden origin of the Doric column absurd; it is essentially a stone form, and the fact that earlier examples are thicker in proportion than the later ones is all in favour of this; and it may be doubtful whether there is any direct connexion between the Lycian tombs and the Doric entablature, though it would be risky to assert that there was not. But there is a good deal in Doric entablature which does point to a timber origin—which is better explained on that supposition than on any other. To admit this assumption is not necessarily, as the author maintains, "to destroy one of the greatest charms of Greek architecture, the æsthetic logic which dominates every part." The æsthetic logic is shown in the way in which these timber *origines* have been translated into stone—made to put on a masonic expression; a process which does away entirely with the idea of mere imitation. The forms point to a far-away wooden origin, but which is only faintly traceable in its evolution into masonic expression. We should prefer to think otherwise; like the author, we would rather suppose that Doric architecture had nothing to do with a wooden origin; but in regard to the entablature we think appearances are against this.

In regard to the refinements of line of the Parthenon the author adopts the simple and commonsense view that the entasis of the columns and the rise of the podium steps was simply (as Vitruvius says of the steps) to prevent them looking hollow; reminding the reader of what seems to be almost overlooked now, that the entasis of the columns is so slight a deviation from the straight line that it was never even seen till looked for. The very refined contours of the Greek mouldings he maintains were drawn by hand, which we should think probable; the fact that the entasis of the columns was evidently set out by scientific methods does not contradict that idea, as that was a curve too delicate and on too large a scale to be drawn by hand. The author refers to the fact that Pennethorne tried to prove that the curves of the mouldings were worked out mathematically; but Pennethorne tried to prove too much, as we showed at the time his book was published. In reference to the fact that the two end columns of a Doric colonnade are closer than the others, the author seems to treat this as a purely æsthetic refinement for the purpose of giving an appearance of strength to the angle of the building; he surely overlooks the difficulty of spacing produced by the necessity (in an æsthetic as well as in a constructive sense) of getting the triglyph at the angle; it was that which led to the closer spacing of the columns. And there is a little point about the fluting of the columns which has been missed: why twenty flutes? Because with that number you get the recess of the flute under the centre of the abacus, where the projection is least, and the point or arris of the flute under the projecting angle of the abacus, thus giving a more logical relation between the plan of the column and the abacus. To do that the flutes must be of a number that will give an odd number when divided by 4, and 20 is the only number between 12 and 28 that will give that result: 28 would be rather too many for effect; 12 of course too few.

The chapters on Roman architecture are perhaps the most interesting part of the book; the subject is connected with so much that is important in regard to the relation between construction and design; and Roman architecture, though far less perfect, is no doubt more multifarious in its interest than Greek. Indeed, we fully sympathise with the author in the claims which he makes for greater attention to and respect for Roman architecture than it has lately received. As he says, "if the Romans had only possessed the artistic sense of the Greeks, their architecture would have been the grandest the world has ever seen." It is a large "if"; but great scale and constructive resource count for something, as well as refined detail.

We hope the Architects' Library may be continued, in other volumes, as well as it has been commenced.

NOTES.

The Unemployed. An important paragraph is to be read in the Board of Trade's Monthly Memorandum on the state of the Labour market for October:—"As compared with a year ago, there was a general improvement in all the principal industries except building," which means, in other words, that there are fewer unemployed in England than a year ago. Yet it would generally be supposed, when one takes up a newspaper, that employment was extraordinarily bad—the fact being that the great want of employment is confined to London and chiefly to the East End. Everyone must sympathise with men out of work, and more especially with their families, but it is obvious that under present circumstances very great care is required in the distribution of relief. More particularly should the question be regarded not from a temporary, but from a permanent point of view; that is, the object to be aimed at is the prevention of the collecting of casual labourers in London. We much fear that the donations which have recently been given will tend to increase the number of unemployed in future years, causing them to expect relief as a matter of course. Unquestionably also, from various causes—some political—more is heard of the unemployed now than formerly was the case, but at any rate we may very well bear in mind that there is evidence that the general conditions of employment are satisfactory.

Workmen's Compensation. Since our summary of Workmen's Compensation cases, which appeared last week, was written, one more case has

been reported of general interest—Spacey *v.* Dowlais Gas and Coke Co. The applicant was a navvy in the employment of the Gas Company, and was engaged in cutting a trench in a road some quarter of a mile from the gasworks, for the purpose of changing a main laid underneath, when he sustained an injury to the eye. No mechanical power was being used at this place. The gasworks themselves constitute a "factory" within the meaning of the Workmen's Compensation Act by reference to the Factory and Workshop Act, 1901, and the County Court judge had held that the mains constituted part of this "factory," and that this man was, therefore, employed "about" a factory. The Court of Appeal reversed this finding, and laid it down that the mains formed no part of the "factory" since they were not connected with the manufacture of the gas (and the Factory Acts denotes "the making of any article"), but were used for its delivery, and the business of manufacturing the gas was distinct from its delivery. The man was, therefore, not in such physical contiguity to the factory as is contemplated by the words of the Act, "on, in, or about." The decision is unquestionable, but it draws attention to the anomalies of the Act since, had the man been engaged on work connected with a "sewer," he could have claimed as being engaged upon an "engineering work," yet the operation of opening up a road to reach a sewer or to reach gas or water-pipes would seem equal in point of danger. In one of the recent cases the Court seemed to attach some importance to the argument that the intention of the Legislature might sometimes be gathered from the dangers attaching to kindred occupations, but this case illustrates the danger of relying on any such reasoning.

The Repair of Highways.

UNQUESTIONABLY our English highways receive more careful attention now than was the case a few years ago, but there is still a good deal of the ratepayers' money wasted by unpractical and unscientific work. For example, now that highway authorities use steam rollers more often, metal is frequently put down unbroken. It is ground in superficially, and gives a fairly level surface till the dry summer weather, when the surface is rapidly destroyed by traffic. Over and over again, too, instances may be seen of metal being spread over the old surface, which has not been broken up; the result is a kind of surface cake instead of one homogeneous road. Again, surveyors are far too lenient in enforcing the law as to cutting and trimming hedges. When a highway is very wide, and has grassy sides, a high hedge does not harm the actual road, but where the road is somewhat narrow, as is the case especially in the rural districts round London, high hedges cause the road to become rotten, it does not dry quickly, and so it produces mud and dust and becomes more easily disturbed by traffic.

The Simplon Tunnel.

AN instance of the great accuracy attainable in the alignment of tunnels and other underground workings is presented by the Simplon tunnel. This undertaking was commenced in August, 1898, by the driving of guide headings from the Swiss and Italian sides of the face, and in February last the actual junction of the galleries was effected, after the serious difficulties mentioned in our "Notes" of October 8, 1904, had been successfully overcome. The estimated length from end to end was 12·5 miles, and, as recent surveys show, the actual length only exceeds this measurement by 2 ft. 7 in. Thus the error was only $\frac{1}{25500}$ of the total length, or less than $2\frac{1}{2}$ in. per mile. The same surveys indicated that the levels of the two galleries were within $3\frac{1}{2}$ in. of each other, corresponding with a variation of $\frac{1}{226000}$ of the length, or $\frac{5}{8}$ in. per mile. With respect to direction, it was found that the line driven from the Swiss frontier deviated $4\frac{1}{2}$ in. towards the west, while that driven from the Italian end deviated $3\frac{1}{2}$ in. towards the east. Thus, the collective discrepancy was 8 in., and the greatest divergence from the true line of each heading only $4\frac{1}{2}$ in., the utter insignificance of the errors being shown by the relation each of them bears to the total length of the tunnel—$\frac{1}{88750}$ and $\frac{1}{184000}$ respectively. These extremely accurate results reflect much credit upon the engineers and contractors concerned in the conduct of this great work.

Venetian Foundations.

OWING to the fact that Venice is built upon a layer of clay, not more than from 18 ft. to 24 ft. thick, resting upon a deep bed of water-logged sand, it may be said that the entire city is carried by a natural raft of huge dimensions floating on the surface of a semi-liquid mass. This unusual condition quite precludes the use of long piles, such as are used in Amsterdam and elsewhere for foundations, because it is essential that the skin of clay should not be pierced. Wherever this happens in Venice a jet of sand and water is forced up by pressure of the overlying stratum, and the bearing power of the pile is destroyed. Consequently, the piles should not penetrate more than about 12 ft. to 18 ft. into the clay, but as this stratum contains occasional pockets of sand and mud it is necessary at such points to drive longer piles so as to reach the clay beneath. The old substructure of the Campanile is a good example of early foundation work, consisting of white poplar piles connected at the top by longitudinal and transverse oak beams, forming a grillage carrying a base of rubble masonry over which are stone footings in five steps. In spite of its great age, the foundation showed comparatively few signs of deterioration when examined after the collapse of the tower, the most serious defect being a subsidence of 6 in. at the north-east angle. The new foundation, now being built around the old work, is of similar character, and is really nothing but an extension of the original foundation. One curious, but by no means surprising, circumstance is that since the demolition and removal of the superstructure, the entire foundation has been raised $1\frac{3}{16}$ in. above its previous level, owing to the unbalanced hydrostatic pressure of the semi-liquid material below. This effect shows how literally true is the statement that Venice floats upon the waters of the Adriatic.

Right to Light over Open Spaces.

THE case of Boyce *v.* Paddington Borough Council, upon which we commented in our issue of August 1, 1903, has been carried to the House of Lords. The case is an important one. The local authority, by virtue of the Metropolitan Open Spaces Acts, 1877 and 1881 and 1887, and the Disused Burial Grounds Act, 1884, had vested in them a disused burial ground to be maintained as an open space. The plaintiff in the action had erected and was erecting certain blocks of flats abutting upon and overlooking this open space. To prevent the plaintiff from acquiring a prescriptive right to light and air the defendants erected a screen or hoarding in front of the plaintiff's windows, and the plaintiff brought an action to restrain them from doing this. Sect. 5 of the Act of 1881 directs that the land is to be held for the enjoyment of the public "in an open condition, free from buildings," and sect. 3 of the Disused Burial Grounds Act of 1884 provides "that it shall not be lawful to erect any buildings upon any disused burial ground except for the purpose of enlarging a church, chapel, meeting-house, or other place of worship." By the Open Spaces Act, 1887, the word "building" in reference to the above is defined to include "any building, permanent or temporary." The House of Lords have reversed the decision of the Court of Appeal, and have restored the judgment of Mr. Justice Buckley—that is to say, it has been held that the erection of this screen in order to preserve the rights attaching to this open space was not inconsistent with the powers conferred on the local authority by the statutes. The nature of the screen erected was not described in detail, so the question as to whether it was a "building" is not so directly decided, but Mr. Justice Buckley intimated that a screen put up for such a purpose would not be a building within the meaning of the above Acts.

Landlord *v.* Tenant.

A CURIOUS contention was raised in the recent case, Gibbon *v.* Payne. So long ago as 1866 certain premises in St. Pancras were leased for ninety-nine years under a lease which contained the usual repairing clause. The premises were described as a "messuage, coach-house, and stables," but it appeared the buildings were not complete, and the tenant was to complete the said buildings to the satisfaction of the lessor within six months. Other houses forming part of the building estate had been also let to the same lessee, and the evidence showed that the stables and coach-house had never been erected, the original scheme having been modified in 1866 by throwing the site appropriated to the stables into the gardens for the adjoining houses. The leases had been assigned and the action now brought was by the present lessors to recover possession of the premises from the present lessees on the ground that they had been guilty of a breach of covenant in omitting to repair the

non-existent coach-house and stables. These facts gave rise to several complicated legal considerations, but in the result the case was decided on the one ground that the lessor had consented to the alteration in the building scheme; he was directly interested in seeing that it was carried out "to his satisfaction," and as his own residence was not remote he had every opportunity of so doing; and it is also to be observed that rent had been received for some thirty-eight years. The mere non-enforcement of an ordinary covenant to repair would, as the Court pointed out, not be sufficient to release it. The lesson to be learnt from this case is one we have constantly brought to the notice of our readers, that in accepting a lease or an assignment of a lease they should carefully see that the covenants have been fulfilled, or they may find themselves saddled with unexpected and apparently impossible liabilities.

Mr. Nelson Dawson's Exhibition.

AT the small gallery at No. 2, Haymarket, called "The Goupil Gallery Annexe" (being a kind of "chapel of ease" to the Goupil Gallery proper), is a collection of nearly 200 works in jewellery, enamel, and metal, by Mr. Nelson Dawson, containing a great deal of beautiful and artistic workmanship. What is remarkable in the smaller articles for personal use or adornment is the way in which rich and beautiful colour is combined with metal-work, by the introduction of transparent enamels or, in some cases, precious stones. We see this combination to perfection in the "Bowl in Silver and Translucent Enamel" (125) and the "Bowl in Wrought Silver with Enamel Lid" (131); in the pendant in gold (93) with a miniature "basket of roses" worked on it with rubies in enamel setting; and in the wrought silver and enamel clasps (78). In a silver match box (104) a most delicate effect is produced by the fine slightly curved lines of the box, and the little turquoise at each angle; we prefer this to the more richly ornamented match box with enamel top(102). The lines adopted for metal work perhaps tend to run a little too much into curved and wavy lines; a little rigidity of line now and then might be an improvement, though in the handles to the "Salad Servers in Wrought Silver" (13) the way in which they are worked out of twists of thin metal is very effective; the silver sugar-tongs next to them (14) are also very delicate bits of design and workmanship. There is occasionally an attempt to treat an object in an unusual form at the expense of practical fitness, as in the set of octagonal serviette rings (18); the serviette in folding naturally makes an approximately circular section, and the circular form of ring is therefore the fittest for its office. Many of the chains and necklaces are very charming; we may notice especially the one with coral beads (66), with long slender links divided by little quatrefoils, and punctuated at regular intervals by a coral bead. The candlesticks mostly are rather ostentatiously simple; they want dignity of style; the pair with a variegated surface ornament in bronze and enamel (175) are unusual and pleasing, and with a greater look of finish about them. Among the larger articles the cover for a stove or radiator (167), in beaten steel, is a delightful contrast to the kind of thing which the shops and tradesmen's catalogues generally show us; the "Picture-stand in Forged Iron" (164—it suggests rather a music-stand) is a fine bold piece of metal work, but the upright support is rather too heavy in character for the light desk which it carries. Architects ought to see this exhibition, which has much that should be attractive to them.

The Society of Fine Arts.

THE exhibition of the same class of work by a French artist, M. Lucien Gaillard, at the Society of Fine Arts, is a notable but not refreshing contrast to Mr. Nelson Dawson's work. The style of the work is larger and bolder, but the disagreeable cleverness of the "article de Paris" runs through it all; the personal ornaments seem those that a "demi-mondaine" rather than a lady would wear; they leave a kind of bad taste behind them. Except as to mere cleverness of execution, our best artists in ornamental work have nothing now to learn from the French; and indeed the contemplation of work like that of M. Gaillard is anything but improving to the taste. The large repoussé metal dish showing crows with outstretched wings (97), executed in alloys of copper and silver and of gold and copper, is a fine and effective piece of work; but the bronze vase in front of it, composed of three Brobdingnagian horned beetles put together, is a thing in a monstrous taste, such as no person of refined artistic perception would bear to have on his table. This imitation of insects is a kind of plague of contemporary French jewellery, as we see it in the bracelet (18) adorned with a large beetle in gold and enamel; a barbarian kind of art, in spite of its finish of execution. The peacock feather bracelet (19), enamel on gold, is a more refined bit of work; but of the whole collection we may say that we are glad that it represents French and not English taste.

Burne-Jones's "Flower Book."

IN another room at the Fine Art Society is hung a collection of reproductions in colour of a curious series of emblematical designs by Burne-Jones, to be published under the title "The Flower Book," though they have no obvious connexion with flowers. They are a series of dream-pictures of figures and backgrounds, mostly in very rich colour, each of them comprised within a circle of about six inches diameter. They are said to have been each originally suggested by the name of some flower and the associations connected with it; but the artist, who began them as a relaxation from more serious work, had himself forgotten the origin of many of them. They are very suggestive little fancies, though the drawing of the figures, with a few exceptions, is of a most naïve and archaic order. We think their value rather exaggerated; though at present, while the memory of the artist is still fresh, copies of them will no doubt be coveted by many. The reproductions, by the Paris firm of Piazza & Cie., are beyond praise; it is difficult indeed to tell them from the originals. Only three hundred copies are to be printed; and the text is not typed, but reproduced in fac-simile from a beautiful script writing by Mr. Graily Hewitt.

The Modern Gallery.

AT the Modern Gallery in Bond-street there is a collection of works by four artists—sculpture by Mrs. Bernard M. Jenkin (Miss Margaret Giles), and paintings by Miss Mabel J. Young, Mr. Reginald Waud, and Mr. W. J. Neatby. Mrs. Jenkin's exhibits include a very nice sketch model for spandrel figures for architectural decoration (89), a bas-relief stone panel, "A Daughter of the Marshes" (97), showing a nude seated figure amidst a quasi-decorative arrangement of water-plants, a very good bit of work; a charming little statuette group "The Grandchild," and a number of small medallions and other work, all of considerable merit. Mr. Waud shows some good portraits in oil; Miss Young's paintings are rather more ambitious in subject than successful; at least they failed to interest us. Mr. Neatby's decorative landscapes are rather like pictures for the nursery, but his series of small heads painted in a decorative manner as medallions, and with symbolic decoration on the mounts, are very charming in their way, and form the most distinctive collection of work in the exhibition.

The New Premises for the Institute.

A LARGE number of Fellows and Associates of the Institute of Architects, in the Provinces as well as in London, have signed a memorial to the Council of the Institute of Architects in the following terms:—

"We, the undersigned members of the Institute, having learned from the President's Address, delivered on the 6th inst., that the R.I.B.A. is about to erect a new building for its own use, feel that an opportunity of designing this should be open to all its members.

In the event of this opportunity being afforded, we suggest that a competition should be held and its conditions based on the 'Regulations for Architectural Competitions,' and that the members should select a jury of three assessors by vote."

We do not think that the Institute would be very well advised to open an unrestricted competition for the new premises to all their members. They would saddle themselves probably with a great number of drawings and a great deal of time and trouble in examining and adjudicating on them, and it is doubtful whether they would evolve a better building than could be had from a limited competition. We should suggest a selection, by ballot in the Council, of twelve competitors, say six from London and six from the Provinces. That would be a suitable way of dealing with the occasion, without entailing an infinity of wasted time and trouble on the competitors as well as on the adjudicators.

DUST DESTRUCTOR AND SEWAGE FARM, NECHELLS, BIRMINGHAM.—The opening of the Nechells destructor and the inauguration of the electric transmission system in connexion with the sewage farm at Tyburn took place on the 7th inst. Mr. Watson was the architect who prepared the plans, and the principal contractors were Messrs. Lee & Son for the whole of the buildings, 15,615*l.*; the British Thomson-Houston Company for the whole of the electrical work, 8,314*l.*; and Messrs. Heenan & Froude for the furnaces, 4,589*l.* The total cost of the scheme is 35,829*l.* 2s., of which the Corporation pays 17,691*l.* 10s. and the Drainage Board 18,137*l.* 12s.

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THE MOTOR EXHIBITION AT OLYMPIA.

JUDGED alike by the number and quality of the exhibits and the crowded attendance of the public, the fourth exhibition promoted by the motor manufacturers and traders must be pronounced an unqualified success. The exhibition opened on Friday last is the second which has been held at Olympia, and it is quite evident that this spacious building is too small to accommodate all types of motor-cars, waggons, and boats on the market, even if foreign exhibits were omitted. Almost the entire area of the main hall is occupied by the Motor-Car section. The Commercial Motor section is to be found partly at one end of the main hall and partly in the annexe, and the Marine Motor section is in the middle of the annexe, where also are sections devoted to Components and Carriage Work, and Machinery used in Automobile Construction. In the gallery are the Tyre and Accessories sections. All these departments without exception are filled to overflowing, and so narrow are the gangways in comparison with the crowds of visitors, that locomotion is a serious problem in many parts of the exhibition.

The pursuit of automobilism as a sport or as a means of recreation has no connexion with the objects of the *Builder*. The motor-car itself as a means of rapid locomotion for private or professional use doubtless appeals to many of our readers, but not to such an extent as to justify detailed notice of the many admirable carriages now on view in the Motor-Car section at Olympia. To deal in the briefest possible terms with the most striking exhibits would occupy far more space than we can afford, and to make mention of a few leading examples would be unfair to others of practically equal merit as regards mechanical details and artistic design. Hence we must leave the department in question with the remark that it constitutes an unanswerable proof of the wonderful progress made by the British motor-car industry within the past year. It must not be supposed, however, that this section is entirely devoted to pleasure cars. On several stands the visitor will find examples of private omnibuses, cabs, and of vehicles specially designed with a view to the requirements of commerce. These developments must be taken as a sign that the possibilities of the motor-car from the utilitarian standpoint are by no means escaping the attention of manufacturers.

When the conscientious visitor has at last completed his lengthy tour of inspection through the long alleys bordered with the most ingenious and dainty productions of the mechanical engineer, the coach-builder, and the upholsterer, and has emerged into the section where commercial motors are displayed, he will be in a far better position to understand the part which self-propelled vehicles promise to play in trade and commerce. As private carriages form but a small proportion of the horse-drawn vehicles of the present, so we predict will private motor-cars represent but a small percentage of the mechanically-propelled traffic of the future.

In the Commercial Motor section there is abundant evidence that the requirements of public authorities, carrying companies, and business firms are occupying a large share of attention from various well-known makers and others who will soon become well known. On every hand are to be found motor omnibuses for the public service, steam and petrol waggons, lorries, and vans, light delivery vans, and small parcels vans. There also are hospital ambulance carriages and other vehicles for public authorities, and one of the most significant adaptations of the internal combustion engine is to be found in a series of motor-driven lawn mowers and a motor roller.

In view of the aid offered by vehicles of this class towards the solution of passenger and goods traffic problems in urban, suburban, and rural districts alike, we may appropriately review the chief types of commercial motor to be found at this year's exhibition.

Commencing with types of the motor omnibus, we have first to record the lively satisfaction experienced that so many British firms should now be in a position to supply the wants of omnibus companies. Whatever the advocates of electric tramways may say, the motor omnibus will surely come to the front, and it is gratifying to find that foreign firms will not be able to make a happy hunting ground of this country so far as concerns future orders.

In the omnibuses on view at Olympia the engine usually ranges from about 24 h.p. to 30 h.p., but in one or two cases the limit rises to 40 h.p. Commendable effort appears to have been made with the object of simplifying the control so as to relieve the driver from details of motor management likely to divert his attention too much from the guidance of the vehicle. Consequently several ingenious devices for automatic lubrication have been introduced, and one firm has an arrangement automatically regulating the ignition to synchronise with the number of revolutions made by the engine. In the matter of gears also we observe ample evidences of judicious selection. Many of the omnibuses have speed-change gears with the wheels always in mesh, this system having the advantage of quiet operation. Some makers transmit power to the hind wheels by means of pinions on the differential shaft, these pinions engaging teeth on the inside or the outside of toothed rings or drums attached to the wheels. Another feature possessing claims to commendation is the fairly general employment of the multiple disc clutch invented by Professor Hele-Shaw, an effective and reliable appliance working without perceptible jar or shock.

To show the active interest taken in the production of omnibuses, we may mention that fully two dozen firms have exhibits, either of complete vehicles or of the underframes and mechanism, and, as several of these firms show two or three different patterns, the total number of such vehicles is probably more than fifty. Messrs. Alford & Alder exhibit a very neat omnibus of 10-12 h.p. fitted with front canopy and wind screen, and having shelves intended for the samples of commercial travellers, a somewhat similar car being shown by the Argyle Motor Company on Stand No. 15. The De Dietrich firm have on view a 24 h.p. omnibus built for the General Omnibus Company of Paris. Near by are a workmanlike 30 h.p. New Arrol-Johnston omnibus to carry thirty-eight passengers, and two omnibuses on the stand of Messrs. Liversedge & Son—one of 35 h.p. with a double-decked body and canopy top, the other of 24 h.p. with single-decked body and front entrance. Messrs. Straker & Squire show a 24 h.p., thirty-four passenger omnibus built to the order of the London Road Car Company for the Hammersmith-Charing Cross route, and on the adjoining stand of the Wolseley Tool and Motor Car Company is a 20 h.p. double-decked vehicle with accommodation for thirty-six passengers, the motor having four forward speeds and one reverse speed. The Milnes-Daimler Company exhibit a standard London double-decked omnibus, constructed to the order of Messrs. Tillings to attain a maximum speed of fourteen miles an hour, the total weight being 4½ tons, and a similar 'bus built for the London and North-Western Railway.

We cannot refer in detail to all the public service vehicles of this class, but mention the following among those of firms whose exhibits specially deserve inspection:—The Sims Manufacturing Company, 28-35 h.p. omnibus for thirty-six passengers; Messrs. Clarkson, Ltd., steam chassis for double-decked omnibus, fitted with new automatic steam generator, liquid fuel burner, and a patented system of lubrication (we ought to say that thirty-four omnibuses of this type have recently been ordered by the London Road Car Company); Messrs. Dennis Bros., a 24 h.p. worm-geared omnibus for thirty-four passengers; Messrs. James & Brown, a 25-30 h.p. omnibus; the Maudslay Motor Company, a very fine double-decked omnibus with 30-40 h.p. engine, having chain drive, four forward speeds, and one reverse speed, built for use in Edinburgh; Messrs. Scott, Stirling & Co., a double-decked 24 h.p. thirty-six passenger, and a single-decked 14 h.p. eighteen passenger omnibus; The British Automobile Development Company, a thirty-six passenger omnibus, with direct drive on the highest of three forward speeds; Messrs. Straker & MacConnel, a 40 h.p. forty-two passenger omnibus, with air-brake control and automatic carburettor, also a 24 h.p. and a 20 h.p. omnibus of generally similar construction. We could continue the category, but limits of space forbid. The foregoing notes, however, show how important a branch of the motor industry is already represented by omnibus building.

Now let us turn for a moment to heavy traction—a section in which the petrol motor chiefly preponderates. As a rule, the type of chassis is analogous to that used in the motor-bus, and most of the heavy waggons include four-cylinder engines, automatic lubricators, three or four speeds, driven by chain or by pinions gearing into internally-toothed wheels. Double ignition is employed in several vehicles, and some have water-cooled brakes.

Among typical examples of vehicles for heavy traction to be found at Olympia several have already been described in our columns when noticing other exhibitions. For this reason it is not necessary to go fully into details on the present occasion. In consequence, we shall content ourselves with such brief references as will serve to point out the more meritorious of the exhibits. Taking the stands in numerical order, we have a well-made 3-ton delivery waggon of 20 h.p. by the Wolseley Tool and Motor Company; two very fine 5-8 ton steam waggons by Messrs. Coulthard & Co.; a serviceable 3-ton petrol lorry for ten miles an hour by Messrs. John J. Thorneycroft & Co.; a 24 h.p. 3-ton lorry and a 2-2½ ton delivery waggon, both with worm gearing, both by Messrs. Dennis Bros.; three different examples of the well-known Straker type; and a 27 h.p. 5-ton lorry by the Maudslay Motor Company. Messrs. Wallis & Steevens exhibit a workmanlike steam tractor with compound engine running in an oil bath, differential gear, and winding drum, the trailer for use with this locomotive being fitted with patent backing gear, screw-friction brake, and draw-bar. The Thames Engineering Works show a 4-ton steam lorry, which we have described in a previous article; the Hay Motor Company have on view a 6-ton steam lorry, built to comply with the regulations of the Local Government Board, and carrying sufficient fuel for a journey of forty to fifty miles; Messrs. Foden, Ltd., show a well-designed 5-ton waggon, also built to comply with the requirements of the Local Government Board. In addition to the foregoing, there are many vans capable of dealing with loads from 1½-2 tons, and numerous examples of small delivery vans for parcels and general merchandise. Without committing ourselves to an exact estimate, we should say that there are in the exhibition at least thirty types of such vehicles suitable for business establishments of various kinds, but, not applying to building and other contractors, individual types cannot be particularly mentioned.

In concluding this general review of a most comprehensive and instructive exhibition attention is directed to two types of vehicle affording one more proof of the numerous directions in which the motor industry is being extended. The first is a 5-ton combined steam-driven tipping waggon and street-watering van, designed for municipal purposes by Messrs. Jesse Ellis & Co., and the second a Straker-Squire motor-ambulance for the Army Hospital Board. It should be mentioned that Messrs. James & Brown also show an ambulance motor-car built for the Metropolitan Asylums Board.

The Marine section includes a comprehensive display of motor-boats and launches, some of considerable size and power, the Machinery section contains a large assortment of machine tools and engineering sundries, while the sections devoted to tyres and accessories are well filled with interesting exhibits of extremely varied character.

This wonderful collection at Olympia is a most convincing proof of the vitality retained by British manufacturers, and a remarkable demonstration of the great national industry they have suddenly built up in our midst.

ALL HALLOWS CHURCH, HUNDRED OF HOO.—A new reredos was dedicated on November 5 in the ancient church of All Hallows, in the Hundred of Hoo, Kent. The reredos and some new panelling for the sanctuary were designed by Mr. Walter Terry, of Brockley, who has followed the style and character of the XVth century work of the screen and of the carved oak pews. In 1890 the windows and chancel of the church were restored, and the wooden turret was rebuilt

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE usual fortnightly meeting of the Royal Institute of British Architects was held at No. 9, Conduit-street on Monday, Mr. John Belcher, A.R.A., President, in the chair.

The minutes were taken as read.

American Methods of Erecting Buildings.

Mr. R. A. Denell, Managing Director of the Waring White Building Company, Ltd., read a paper on "American Methods of Erecting Buildings," of which the following is an abstract:—

In his opening remarks the author referred to the increase of rapidity of construction and economy as being the dominant factors in the consideration of the subject. American contractors are generally good business men, and apply business principles to their affairs. They try to make every man in their employ responsible in his own position or sphere, advancing him when he shows capabilities to trust his own judgment and to go ahead alone successfully. The best builders in America, as a general rule, have served a large portion of their apprenticeship in architects' offices, and this has resulted in a better understanding of the architects' ideals and demands. Much had been written about the British workingman, but the author did not agree with the writers. They all attacked the bricklayer. The English bricklayer, in his opinion, did better work than his fellow in any other country. As regards the amount of work done, he had had men lay an equal, and in many cases a larger, number of bricks per day, under similar conditions, than he had in America. Continental brickwork does not compare with work here. He considered, too, both the English stonemason and the navvy splendid workmen. We get careless of our labour here because of its cheapness; were it more expensive we should watch over it more and give it better supervision. The best American contractors never allow more than twenty-five men to work without a foreman, the result being that he sees that they work, and, what is more important, that the work is planned out for them in advance, and that their materials will be ready as wanted. One of the chief reasons for the rapidity of construction in large buildings in America is the way in which materials are dealt with. Time being an essential factor, it would be impossible for a contractor there to execute joinery, stonework, marble work, and ornamental plastering so efficiently or so well with his own plant and in his own shops as each man in his own particular trade, who has made it a speciality and has had life-long experience in it. Such work as steel, terra-cotta, partitions, and mechanical plant is manufactured by much larger firms than here, and can, therefore, be supplied much more quickly. The builder stands, however, between the architect and the specialists, seeing that the material is correct in quality and workmanship, and is being worked carefully to details, and also that it is being advanced so as to be ready at the proper time to fit in with the other work. Coming to the larger aspect of the subject, the author observed that the difference in the methods of construction in American practice is the result of evolution in response to certain conditions, climatic and economic, and public demand. The predominating client is practical and commercial, his demands are those that result in the greatest financial benefit to himself, such as speed, economy in construction, greatest available space to let, etc. The remuneration of American architects is the same as here; but for this much more work is required, more detail drawings having to be furnished, and no assistance from clerks of works or quantity surveyors being afforded. In America the quantity surveyor is unknown. The time given to builders in which to estimate is rarely over a fortnight, and each builder keeps his own staff of estimators. If consulting, mechanical, sanitary, and structural steel engineers are required, they are generally employed by the architect; and to avoid the expense of this many architects have these engineers on their office staff. This would only be remunerative when a large amount of work was done annually—in the case, for instance, of men who deal with the largest work, amounting to from one to four millions sterling per annum. In some cases an architect's establishment costs would be about 50,000*l.* a year.

In America each city has its own building department, which is the only authority to be consulted. Before starting work plans must be filed and approved, after which, except for variations, etc., one can proceed without further interference if following plans which have been filed. The larger cities have a competent staff to deal with building works; and also an engineering staff to calculate the strength of the various parts from the drawings, so as to see that they conform to the by-laws, and are structurally safe, and thus prevent "jerry" building, etc. Again, each city has its land surveyors, who at once, upon notification, fix according to law and to deed and title, the exact boundaries of your client's property. Thus, the architect, immediately upon starting his work, obtains exact dimensions for his plans, so that the builder has these fixed dimensions to work to, and from which to order materials in advance.

With regard to materials, a small brick is used, measuring on the average about 8¼ in. by 4⅛ in. by 2⅛ in., except glazed bricks, for which the English size is generally used. The bricks are laid in all manner of bonds, such as English, Flemish, no-bond, etc. For this last reason English brickwork is superior structurally to American. Timber is much more extensively used, and is much cheaper than here. This is the reason of so many wooden houses being erected, and also so much "mill construction," or what is called "slow-burning construction." The principle of this latter is to use large timbers throughout, *i.e.*, heavy joists, measuring at least 3 in. by 12 in., and stanchions, or pillars, at least 12 in. by 12 in.; while all flooring is 3 in. thick or more, so that in case of fire they will char a long while before breaking. This system of construction is recognised by insurance companies as second only to the ordinary fire-resisting construction, and when a sprinkler system is installed is considered, in the majority of cases, equally as good. Terra-cotta, the author considered, has reached a higher usefulness in America than here, the reasons being, first, the greater variety of clays, which gives the opportunity of furnishing almost any colour or shade; and secondly, it is particularly fitted for an external covering to a steel skeleton frame. America is also in advance in its manufacture, the terra-cotta being straighter, truer, and produced in much larger blocks than here, thus more nearly approaching stone in design.

There is very little concrete stair work in the States, cast-iron being used in fire-resisting buildings on account of the lightness of construction. In the author's opinion it would be better for American practice, especially as regards fire-resistance, to follow the English by using concrete staircases in all non-fire-resisting buildings, and also as regards the system of concrete lintels in use here, but not in America.

For buildings over eight stories in height the prevailing system of floor construction is either hollow terra-cotta blocks built in arch form, with either flat or segmental sofits or some form of reinforced concrete. Partitions in these buildings are of hollow terra-cotta blocks, expanded metal, or "Mack." Breeze building-blocks are not yet used. In New York all buildings over twelve stories in height must not only have the floors and partitions of fire-resisting material, but if woodwork be used it must be treated, whatever its kind, by a fire-resisting process. All exterior window frames and sashes must be of metal with fire-resisting glazing. Party-walls are not customary in the larger buildings, and the cantilever foundation has been devised to meet the need of supporting adjoining walls on their respective cartilages without the expense of underpinning and guarding against disturbance that comes from using spreading foundations which enter upon neighbouring land. Cantilever foundations are mostly found in the sky-scrapers of New York.

The author called particular attention to the large amount of cast-iron work used in the States in the framework of buildings up to twelve stories in height. Cast-iron, he believed, could be used to great advantage here for stanchions, as it is a cheap material immediately available, and it can always be manufactured close to where the work is being done. It can also be delivered and erected quickly.

Passing on to consider the "sky-scraper," a type of building that has more or less revolutionised building practice, the author referred to the tales occasionally heard of forty-story buildings. Such, he believed, could be safely built; but he thought that the practical commercial building would not be higher than twenty stories, and that would soon be the limit. When built on proper lines, the life of these steel-frame buildings is as long as that of other buildings. The steel is entirely buried in concrete, all exterior stanchions being inclosed in brickwork, and the interstices grouted full of cement mortar. The interior stanchions are treated in the same way, bricks or fireclay being used for covering. In addition, the stanchions themselves are now being filled internally, while being erected, with concrete. As to a comparison in cost between buildings supported on steel stanchions and by ordinary brick walls or piers, the cost of carrying a load on a steel stanchion is about one third that for carrying the same load on a brick pier, providing the load is about 60 tons. There is also a saving of floor space by steel construction. The area of a steel stanchion to carry 60 tons can easily be made 1·46 sq. ft. finished and inclosed where the sectional area of a brick pier to carry the same load would be 10 sq. ft. Another advantage is its adaptability to the construction of architectural features, as projections outside the main building lines can easily be carried on brackets or cantilevers with little cost and without interfering with the main steel frame. The advantages, too, in the way of planning are great, for walls can be taken out and large areas gained wherever desired. Again, the building's advancement does not entirely depend upon weather or even daylight, as work can be carried forward in the various shops and well in advance. Not only that, but the steel frame can be pushed ahead and the inclosing shell can follow at any floor, working, if necessary, on several stories at the same time, and starting interior work long before the exterior carcass is completed. As to the æsthetic legitimacy of steelwork, there are logical reasons for its adoption; and if there is reason, then surely steel cannot be inartistic, any more than timber.

In conclusion, the author said that there were a great many things America can learn from England, an older country with much experience. On the other hand, there are things Englishmen can learn from Americans, who have gone ahead with energy, making mistakes, realising them, and beginning afresh again, as all youth does and will when it has the proper grit. Architect and builder should work together. The builder must have plans, details, and instructions complete and definite at the earliest moment in order to accomplish the desired results. Give him full control and make him alone responsible. If the architect deals with one person for a portion of the work and another for something else, he not only relieves the builder of a portion of that responsibility, but he actually hampers the builder's progress, for then the other person looks to the architect, and not to the builder.

Mr. B. I. Greenwood (President of the Institute of Builders), in moving a vote of thanks to the reader of the paper, said that they were filled with admiration of American methods, but he thought they were not filled with envy. They could admire that which ingenuity could do without, being particularly anxious to do exactly the same thing themselves. He was sure that the circumstances which obtained in America would not fill the architectural profession with envy, because they had been told that, while the remuneration of architects was the same, yet there was a great deal more work required, and it seemed to him that the enormous staff which it appeared it was necessary for an American architect to retain was somewhat appalling. As to the surveyor, well, he was extinct, so that it was not likely that the quantity surveyor would be enamoured of the American system. Then, as to the builders: they had to pay 1s. 10½d. per hour for mechanics, and take out their own

quantities; he could assure them there would be no envy, and builders would not be desirous of emigrating just yet, because they believed that more favourable circumstances obtained in the old country. He was surprised to hear of the custom in America of separate contractors being employed on the same building for different trades. He was surprised because they in England were more modern than that. He knew that in the old days, and sometimes in Scotland even now, the custom prevailed, but he had always thought that the rapidity of construction which obtained in America required that the whole should be in the hands of one contractor. Now, however, that they heard that the different trades were in the hands of different specialists, it became all the more phenomenal that such buildings could be erected in the space of time they had heard. He did not think that the elevated buildings which they had seen would ever come over to this country. It was like living in a pit to walk through streets of such buildings. Perhaps, after all, it was a fortunate thing that the first experiment in those high buildings in London had proved such a monstrosity—he referred to the buildings at St. James's-park. He had always thought that those buildings were things to be regretted, but perhaps, after all, it was a blessing in disguise, because it had given them such a horror of that kind of thing which might, at all events, stave off a repetition for many generations to come. He ought, perhaps, to make some reference to what was said concerning the British bricklayer who had been so vilified in the Press. The gentlemen who wrote the letters in the Press—and he was not one of them—compared what the bricklayer did now with what he used to do before. They did not compare what the British bricklayer did with what the foreigner did, but they compared it with what he did in years gone by. He was quite sure that the correspondence was justified at the time it was written, because, a few years ago, the output of work of the average bricklayer was very much less than it was a few years before. But these things altered, and when trade became a little more slack, then the bricklayer did a little more work. When he knew that there were three or four men waiting outside to do the work he took care to do it himself. It might be that even now the British bricklayer did his work better than in America or on the Continent, but he was not in a position to express an opinion. It was delightful to hear of the way in which the builders in America allocated the different floors of a building to pay the various charges, and another extraordinary thing to hear was that the top floor was the highest in rent. They in England did not know that the highest floor had the best rental value, and it was a very convenient argument they had heard that the top floors were so quiet, and could be so easily reached by means of lifts. If they could only persuade Englishmen to believe that, they would accomplish a most desirable thing from the property owners' point of view.

Mr. John Slater seconded the motion, and said that the lecturer had shown them a large number of buildings which, whatever they might think of them architecturally or æsthetically, were undoubtedly interesting. There was no doubt but that the recent work of American companies in London had been very interesting to architects and builders, because they had seen with their own eyes the great rapidity with which these buildings were run up. He was not, however, quite sure that this rapidity of building was a good thing. He presumed that nearly every architect who had had to design buildings must have felt as his work went on that he wished to make some little alterations here and there to improve the building, but it seemed to him that the system of construction which the American syndicates adopted practically precluded any alteration, because they said, "We have to get on and get finished, so that we cannot allow you to make any variations at all." He was not sure that that was best for the finished building. With regard to what Mr. Denell had said as to the British bricklayer, he happened some few years ago to have had experience of Continental bricklayers. He had to look after the building of a lager beer brewery in this country, and all the work was done by a German contractor, who imported a number of German bricklayers. He was bound to say that it was an absolute revelation to him to see the way those bricklayers worked, for they did in a day what he was sure the ordinary British bricklayer would take three days to do. He was not concerned to support or attack the various trades unions which existed, but they were told that those unions forbade a bricklayer to lay more than a certain number of bricks per day, and, if that was the case, it seemed to him that the workmen themselves gave up all their own individuality. There was no preference given to a good workman over a bad one, because all were brought down to the same hard and fast lines. It did seem to him that that was not the best way to get the best work out of an individual man. Mr. Denell had told them that in America each State had its building department, and that the larger cities had a competent staff to deal with building works, and that they calculated the strength of the parts from the drawings. He maintained that that was not the business of the municipality at all. The London County Council was doing the same thing, and he contended that they were taking upon themselves a responsibility that was not theirs at all. They were using up the time of their staff in a way which they ought not to, because if the architect or the engineer designed a building he was responsible for its safety and its methods of construction, and he did not think it wise of municipalities to take upon themselves to go over the drawings of the architect to see if it was safe. They must remember that if the municipality took up this work they relieved the architect of responsibility altogether, and although probably no architect would wish to be relieved of such responsibility, yet a large number of buildings were built in London and other cities without an architect at all, and if the municipal body took upon themselves to be responsible for saying whether these were safe or not, the builder would trouble nothing at all about it. There was the risk of the municipal body, in its subordinates, being wrong, just as much as if it was left to the ordinary designer. He ventured to hope that they would not have in London any constructions like some of those which had been shown that night. One in particular he felt everyone must have noticed; it was an enormous building of seventeen or eighteen stories high, and, so far as one could see from the elevation, it looked to be about 12 ft. wide. Personally, he could not inhabit such a building without fearing that it would be blown down. But, apart altogether from any criticisms of that sort, they were very much indebted to Mr. Denell for having given them those particulars of American construction, because, whatever they might think of them, yet the more they knew about the methods of construction which such buildings entailed the more they would be able to decide whether it was worth their while or in the interests of their clients to employ such systems as those, or to depend upon the older, more conservative, and, he ventured to think, more reliable methods of ordinary English contractors.

Mr. Howard Colls said that as to the "flat iron building" in New York, the draught it occasioned was very great. Some of the buildings he saw in New York were very high, and two of them, in the Fifth-avenue, looked very imposing, because they formed a noble entrance to the avenue. Those buildings were, however, isolated, but if similar buildings were to be carried all along the street there would be no sun in the street at all. If these buildings were everywhere, he doubted if anyone could walk about New York, and it was obvious that if such buildings were put up as to make the streets uninhabitable the result could not be considered satisfactory. There seemed to be an idea that quick building was an advantage. Of course, speed was very desirable, but in America they saw, not so much speed, as an intense hurry. They never seemed to do anything quietly, but to try and do it in the quickest possible time. What he feared was that this system of hurry could not be conducive to good building. They knew when they talked about the splendid building of the old days that when a man was building a mansion he did the brickwork one year and the plastering the next year, and the joiner's work the following year, and so on, and the result was magnificent. That system could not obtain now, but still he thought that this love of hurry for hurry's sake was a grave disadvantage to modern building. No building constructed beyond a certain speed could possibly be as good as one which was more leisurely but still speedily and properly done.

Mr. W. Woodward said that previous speakers had somewhat misapprehended the purpose of the paper. He had detected no desire on the part of Mr. Denell to suggest that they should adopt in London the methods which prevailed in America, and the object of his paper was to tell exactly what took place in America, so that perhaps, even in London, they might gather some lessons which might be useful, bearing in mind that they must not rest quietly with the old-fashioned methods of construction, but that they must go with the times and conform to those requirements which were certainly as much needed in London as in America. He thoroughly agreed with Mr. Slater in what he said as to the undesirability of municipal authorities taking on themselves responsibilities which did not belong to them, for in taking this responsibility they considerably hampered the architect in his dealing with the buildings. They knew that there were architects in London quite as capable of designing their buildings with perfect safety as any employé of either the borough councils or the London County Council, and having admitted this possibility, for such an official to hamper the architect in the execution of his work only resulted in unnecessary expense to the client and delay in the building. Mr. Denell had told them, in speaking of labour, that the tirade should not be confined to bricklayers, and he agreed with him. The plasterers were quite as bad as the bricklayers, if not a great deal worse. He had no hesitation in saying that the whole reason for the present state of idleness on the part of the workmen was due to trades unionism. Mr. Denell had said that wages in America ranged from 1s. 10½d. to 2s. 11d. per hour, so it looked as if the principle of levelling everyone down, as Mr. Slater had stated, did not prevail in America. If that were so, he hoped that they would gather a lesson from it, and that the British workman would gather a lesson, and agree that honest, healthy, upright men should not be confined to the same wage as idle drunkards. One important matter which prevailed in America, and which should prevail a great deal more in London, was that of "looking ahead." The secret of delay in building was that the builder, or builder's foreman, did not look sufficiently ahead. He (the speaker) did not see why building should not be as good if rapidly carried out as if slowly carried out, provided that there was space in the building for the various operatives to carry on their work. With regard to the sub-contractor, he noticed that in one part of his paper Mr. Denell said that the Americans indulged in sub-contracting, and in another part he said that the building was wholly in charge of the builder. All he could say was that the fewer sub-contractors there were on a building the better. The absence of the quantity surveyor might or might not be conducive to rapidity, and if the quantities were properly taken out, he did not see why one or two men should not take out the same quantities as rapidly as, say, twenty different architects. He took it, however, that in America they had some more rapid system of arriving at estimates than in this country, and he did not know whether the builder suffered or whether the client suffered. Another important matter which concerned architects now in these very large buildings which demanded steel construction was that the architect was not capable of doing the whole thing, and had to have assistance for the engineering work at the building. In America he gathered that the architect kept a staff of engineers, and he supposed that a question which would rise in the architectural profession soon was whether the designing of this important engineering work was part and parcel of the architect's duties, for which he should be paid, or whether it was part and parcel of the engineer's duties, which the clients should pay for apart from the

charges of the architect. They had heard also that in America there was one Department responsible for passing building work, and they would that that system could prevail in London. They wished in London that they could take their drawings to one department and that they could be approved by that department and the thing done with, instead of now having to go to half a dozen different departments, each with its own fad. They might also take a lesson from America with regard to terra-cotta. They knew that steel framework was coming largely into use in London, and the information which had been given by Mr. Denell that evening would be of great value to them.

Mr. A. T. Taylor (Secretary of the Institute in Canada) congratulated Mr. Denell on his simple, straightforward, practical paper, and also that he had disclaimed all responsibility for the title, as he (the speaker) took exception to the building methods of the United States being applied to Canada. After all, the great difference between them was merely the evolution of the sky-scraper. In every other respect, while there were little differences in detail, yet, in the general run, they were practically the same. He thought that Mr. Greenwood somewhat misunderstood the lecturer. Mr. Denell did not say that the work was sub-let. It was generally taken by one contractor, but the work was so large that he sub-let it himself to other contractors. The architect, however, only dealt with one contractor. It was manifestly impossible on a building costing ten million dollars or so that one man could do the whole of the work himself, and that was where the rapidity of the operation came in. The moment the contract was signed the architect had all his details ready, and that meant a great deal. That was not the custom over here, but, in America, they might have every part of the work complete and finished by the time the contract was signed. The result was that operations were started at once, and while the steel frame was going up, the stonework was being cut, and before the steel frame was finished the stonework was being carried up. The same thing applied to the joiners and other work—everything was ready the moment it was wanted. In that way, by mapping out everything carefully from the beginning, they got speed. From his experience on the other side he felt that it was absolutely essential that municipal authorities should have some right of veto on plans put before them. It must be remembered that they were not all architects who prepared plans on the other side, and a great many of those who presumed to be architects were builders, and many of the plans sent in were far from being right, and it was absolutely necessary that there should be some authority to go over them and see that they were right. They had seen several cases in which buildings erected in New York had fallen down before they were finished, and that was because the municipal authority was remiss, as well as the original designers. As to by-laws, he had examined the by-laws of all the principal cities of the United States, and he was interested to see how carefully they were drawn up, and he considered it very essential that there should be some authority to look after the drawings. He was, of course, confident that the drawings of the members of the Royal Institute of British Architects would not require any such revision, but, on the other side, they were not all members of the Institute. As regarded the sky-scrapers, although the design of them was not the question before them that night, yet the questions of design and construction were so associated that it was difficult to discuss one without the other. He felt that of all idiocies they were the worst, and he hoped they would never blossom forth on this side. They had simply ruined some of the finest streets in New York, and if they went on with them they would not be able to walk in the streets. They would want streets at least 300 ft. wide for such structures, and that would mean laying out the streets *de novo*. Down Broadway they were nearly blown down; the blasts and gales which drove down there were something terrible. With regard to the flat-iron building, it was a fact that sometimes people were blown off their feet, and it was quite a common occurrence for the plate-glass windows opposite to be blown out. One other thing he would mention was that he was not so sanguine as Mr. Denell as to the life of these high buildings. Mr. Denell seemed to think that the casing of the steel construction in cement was all right, but, whatever might be the custom now—and he knew that they were more careful than they were some years ago—he knew that for many years care was not taken. The painting was very faulty, and rust commenced on the steel bars, and then they were enclosed in wet brickwork and covered up. He was sure that corrosion was going on inside these brick piers, and some day they would have these sky-scrapers collapse. If so, the results would be perfectly awful, for, besides the thousands of persons in the buildings themselves, they would bring down all the houses around. He was perfectly convinced that that would happen. The life of the buildings had been too short for them to see it yet, but in forty, fifty, or sixty years, something of the kind would happen. Of course, with very great care that might be avoided, and, as he said, much greater care was taken at the present time.

Mr. Hudson said he understood that a life of twenty-five years was reckoned for these tall buildings, to allow for a remunerative return of the capital expended, and after that they might be mere scrap-heaps.

The Chairman, in putting the vote of thanks to the meeting, said there was no doubt it was quite true that the Britisher could learn a great deal from the American. They had learned to allow the American first to make experiments, and if successful they followed. The world progressed no doubt a good deal owing to the energy and go of the Americans, but they moved much more slowly in this country, and in the other countries of Europe generally. They looked upon everything which was novel with some suspicion, and, in fact, if they went to their clients and suggested the adoption of some new method, the client required to know where it had been done before, and whether he could see it, or if it had been done in the days of Queen Anne. In America it was very different. There, everything novel was approved of. If a man made an experiment in America and it succeeded, he was soon raised to a position of distinction, and made his "pile." If by any chance it failed, then the country was so large that he moved a few thousand miles away and started again. Mr. Denell had told them some interesting things, and in one or two instances had made them gape with astonishment. An architect's establishment costing 50,000*l*. a year was rather staggering. Whether the architect was expected to get out the quantities, and keep a tame engineer on the premises, he did not know, but he thought there must be some means of obtaining a *quid pro quo*. They had also learned that the builders passed some time in an architect's office, and that the builder took out his own quantities. (They were remarkably trusting in America!) They were told that they made out plans and specifications for the frame building construction, which was all to save the architect trouble, and to deliver him from unnecessary worries. This was exceedingly satisfactory and nice, but, of course, this must be paid for, and he did not doubt that the extra cost of the building would more than recoup both. What was the gain, therefore? They got increased speed in execution, but, as scientific men told them, they could not have something for nothing. If they wanted increased speed they must pay the corresponding additional cost of the power. He thought, however, that they had learned two lessons. One was that they must not lag behind, but take every advantage of improved methods consistent with their work. Of course, in this steel framework they had a very serious problem, and he could not help feeling that, if anything of that sort developed to any great extent, they would all have to become engineers as well as architects, because the architect, in the cases they had seen that night, seemed to take a very secondary place. It was necessary for them to look the thing in the face and ascertain whether they were in a position to become engineers.

The motion having been heartily carried,

Mr. Denell, in expressing his thanks, said that the letter which he received from the secretary in reference to his paper stated that he should give a paper on American methods of building, and that was what he had tried to give them that evening. They must remember that the laws and conditions were quite different in the two countries, and he thought that the quickest way round was "straight through," leaving it to architects to apply what he had told them as they thought fit. Mr. Woodward had referred to the range of wages, but that depended upon the trade—the bricklayer would get one wage, and the steel erector, whose occupation was a very dangerous one, would get higher wages. The wages were all fixed by the unions, and, with regard to the unions, he hoped they would never have the experience over here of them that they had in America. With regard to the work being done by sub-contractors, what he meant to convey was this: the builder was the general contractor, and he sub-divided the work again. The architect only dealt with one man, but if there was work to be manufactured in a shop, the builder gave that to someone else, for it was not the custom for builders in America to have their shops as builders over here had.

The Chairman stated that the next meeting would be held on December 4, when an election of members would take place, and the result of the November examination would be announced. Mr. H. T. Bonner had given notice of his intention to move the following resolution:—"That neither the President nor the Council, nor either of them, shall approach the promoters of any competition with the object of their nominating competitors. Nor shall the President nor the Council appoint any professional assessor in any competition unless requested to do so by the promoters of the competition."

THE ARCHITECTURAL ASSOCIATION.

An ordinary fortnightly meeting of the Architectural Association was held on Friday last week at 18, Tufton-street, Westminster, S.W., Mr. E. Guy Dawber, President, presiding.

The minutes were read and confirmed, some nominations were read, and the following gentlemen were elected as members, *i.e.*, Messrs. Winter Rose, Philip E. Webb, J. W. Jarvis, A. G. Bridger, K. L. Kiddle, J. Seddon, B. Clough Williams-Ellis, H. G. Taylor, J. E. Henderson, R. O. Adamson, R. W. A. J. Cosway, G. W. Joslin, W. H. Hatchard Smith, and G. Flint-Clarkson.

The Building Fund.

The Chairman then announced the following further donations to the Building Fund, *i.e.*:—

	£	s.	d.
H. P. G. Maule (2nd donation)	5	5	0
C. R. R. Clark	2	2	0
F. S. Chesterton	1	1	0
W. Dewes (2nd donation)	1	1	0
H. White	1	0	0
F. T. Baggallay		10	6
C. H. Brodie		10	6
A. E. Bullock		10	6
A. O. Collard		10	6
W. J. Davies		10	6
H. T. Hare		10	6

The Chairman also proposed a vote of thanks to Professor Henry Adams for a donation of some samples of wood and stone. They would be most useful to members of the Association, and he was sure the members would all join with him in thanking Professor Adams for his gift.

The motion was heartily agreed to.

President's "At Home."

The Chairman said he desired to announce that on December 8 he would be "At Home" in the Association premises, and he hoped that all those present that evening and all members of the Association who could possibly manage to do so would be present. It was proposed to have an exhibition of the work done by students during the summer, and he hoped that all those who had done any sketching would send in one or two of their sketches, or a sketch-book. Great care would be taken with the sketches. He was anxious that those who did not compete for the Association prizes, or who were not great sketchers, should send in their work and let it be seen what they could do. He hoped to get some sketches by older men as well. With incidental music and so on they hoped to have a pleasant evening.

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Old Manor-houses.

Mr. J. A. Gotch then read a paper on "Old Manor-houses," which was illustrated by a large number of lantern views from photographs taken, with two exceptions, by Mr. Gotch himself. The Chairman, in calling upon the lecturer, said it was quite unnecessary for him to say what an authority Mr. Gotch was on everything connected with the domestic architecture of England. The following is the paper:—

"The title of this paper must not be taken too literally. A manor-house is, strictly speaking, the dwelling-house of the lord of the manor; and a manor was a tract of land granted by the King to some person of note in return for certain services, and over which the grantee had various rights beyond that of possession. The legal aspect of the subject is often both interesting and amusing, but it is not that with which we are now concerned; nor will it be necessary that the manor, from the standpoint of law, should in any way control what is to be said. But a manor-house, being the principal house on the manor and the home of the possessor, was naturally a building of some distinction, although inferior in size and importance to the castles of the great barons. Being a building of some distinction it possessed architectural interest, although not to be ranked among the great examples of architecture. The houses, therefore, which are now to be considered are not necessarily manor-houses in the technical sense, but rather those of medium size and importance, of which the ordinary manor-house was the type.

There were many houses of this kind in existence even in the days which we are accustomed to picture to ourselves as dominated by castles. But a great number of them have disappeared, having been replaced in many instances by more modern dwellings. The mediæval house was perhaps rebuilt in the reign of Henry VIII., then again in the times of Elizabeth. If the fortunes of the family permitted, it may once more have been transformed in the XVIIth century, and yet again in the XVIIIth; nor is it beyond the bounds of possibility that the XIXth century may have put its uncertain stamp upon the latest successor of the mediæval original. It is an interesting speculation how long a house which is continuously inhabited will last without reconstruction. Given plenty of money with which to rebuild, and probably a century is as long as the family will care to put up with the old fashions. It is then thought necessary to modernise the place, unless considerations of sentiment or economy induce the builders to retain some of the ancient work.

In consequence of this rebuilding, early houses are not very numerous, and most of those which have survived have undergone frequent alterations; it is therefore difficult to find examples of untouched early domestic work. Nevertheless, by comparing one fragmentary specimen with another, it is possible to ascertain what were the main lines upon which they were built. Many of them were not strongly fortified, even in the turbulent times of the Edwards. They were arranged with a view to defence, it is true, with thick walls and small windows, but it was defence from a casual attack and not from a set siege. They were generally surrounded by a moat, and the stronger ones were furnished with a drawbridge and portcullis; but many of them had merely an ordinary bridge and a strong door. The larger sort were built round a courtyard, which was entered either through a gateway in the house itself or through a gatehouse set in a wall of enclosure. These early dispositions, which took their rise from the necessities for defence, were retained long after the need for such precautions had disappeared; and, without any conscious endeavour on the part of the builders, they added piquancy and interest to the composition.

Another interesting speculation which suggests itself is how far were these old manor-houses the outcome of careful and painstaking design? How much was there of intentional composition in the grouping of their parts? The answers to these questions would probably be found to be "Not very far" and "Not very much." There was, we must remember, a particular style in vogue at each period and a particular type of plan. Half the difficulty of the present-day designer, therefore, was removed at once, or rather, it never arose. The wants to be supplied were simple, and so also were the means of supplying them. There were a few well-recognised apartments which had to be provided in every house; if more accommodation were required it was added in the simplest way and without much endeavour to harmonise it with the rest of the building. Hence, the planning of many old houses is very haphazard, with the result that their appearance is picturesque; but it may be doubted whether the designer aimed intentionally at a picturesque effect. In fact, half the delight which these old houses inspire arises from their unstudied beauty; they look as inevitable as a natural growth. The masons had their traditional methods of solving the simple problems with which they had to deal; they had their ways of making their windows, their doorways, their chimneys. A window more or less here or there offered no difficulty; an additional irregularity did no harm. Especially is this the case in the smaller and less pretentious houses. In those of more importance a greater foresight was often exercised, and where a "surveyor," or, as we should now style him, an "architect" was employed, a good deal of skill was displayed. No one can examine John Thorpe's drawings, for instance, without coming to the conclusion that he was a very ingenious planner, and always bore in mind the outward effect which the disposition of his various rooms would produce.

But now, let us look at a number of views of old manor-houses of various dates and from all parts of the country. We shall see how much they have in common, and yet how widely different they look, owing largely to the materials of which they were built, which were naturally influenced in great degree by local conditions. The material which of all others has played the most important part in architecture hitherto is undoubtedly stone. Wherever we look and upon whatever period we fix our eyes we find that probably 90 per cent. of architectural work has been erected in stone, and that of the remainder at least one-half has its ornament executed in that material, even though the bulk of the walls may be built of some other, such as brick. Somewhat the same proportions hold good in respect of these old manor-houses. Most of them are built of stone. Where stone was not readily procured, the walling was perhaps of brick or of timber and plaster, but even then stone was used for the ornamental portions. Not so much in half-timber work, because the wood was easily worked. But, in regard to brick, and its ally terra-cotta, although they furnish some fine examples in certain districts, yet in point of number they are comparatively insignificant. They occur chiefly in the southern and eastern counties, and even there the mouldings of the windows and doors will sometimes be found to be worked in plaster or cement in imitation of stone.

The illustrations, with two exceptions, are all from photographs which I have taken myself. This necessarily limits their range to a certain extent, but it perhaps helps to increase their reality and ensure their genuineness. They are purposely selected from places which, for the most part, are little known, and which therefore will probably be new to many of those present.

Longthorpe Tower.

The first example is Longthorpe Tower, situated in a small village of that name about two miles west of Peterborough, the village of which Thorpe Hall is now the principal house, a fine and interesting specimen of the work of Inigo Jones's son-in-law, Webb. The Tower is of very different character from the Hall. It was a country-house of the abbots of Peterborough, built for peaceful purposes, but made of sufficient strength to render it secure against casual attack. There is not much left of the original building besides the tower and the end of an apartment which may have been the hall. This is of Early English date, and may be put at about 1250. What the original accommodation may have been is a matter for conjecture; but it probably consisted of a hall, the tower, in which the abbot's private rooms were placed, and some kitchens which have disappeared, possibly because they were built of wood. The house has undergone many alterations. At the end of the limb, which was presumably the hall, there is a XVth-century window on the ground floor and a XVIIth-century window above it. There is also a wing of the latter date, and a further addition of modern times. In fact, the house shows signs, like nearly all ancient dwellings, of continuous occupation and continuous changes to meet changing conditions. The most interesting part is the tower itself, which is a Midland version of the Northern peel-towers. It consists of only three floors, whereas in the towers of the north of England and south of Scotland there are usually five floors; but, then, it must be remembered that northern peel-towers were generally self-contained, and had no adjoining apartments. The ground floor here is provided with extremely small windows, only 4 in. wide; the other two floors, being less accessible from outside, have windows of more cheerful size; but even in the case of the middle story, which was the chief apartment, it was considered necessary to enlarge the original windows in the XVIIth century. The lights of the two lower stories are glazed, and it is not impossible that those of the principal room were glazed from the outset, but glass was far too great a luxury to be bestowed upon inferior rooms and in those days all but the most important windows were provided with nothing more than shutters. The windows of the top floor at Longthorpe have clearly never been glazed from the outset to this day, and it is needless to say that the room is not used for domestic purposes. The ground-floor room was approached from the adjoining building, and so also was the room above it; but access to the topmost room was gained by a narrow staircase in the thickness of the wall, and from this room a second staircase wound round a newel up to the battlements of the roof. The ground floor was merely a cellar or store-place; the first floor, which alone has a fireplace, was the solar, or lord's private room; while the room over it was probably devoted to his retainers as a sort of watch-tower. In this room there is a latrine in the thickness of the wall.

There were probably some outer defences to the house, but, if so, they have entirely disappeared, including the moat, which must almost certainly have existed.

Woodcroft Castle.

The next house in point of date is Woodcroft Castle, not far from Stamford. This presents features which are absent from Longthorpe, but lacks others which exist there. For instance, there is no ancient staircase, nor any sure indications of where it was. The whole place has been more drastically remodelled inside, and restoration (necessary no doubt) has played havoc with the ancient arrangements. On the other hand, the moat remains, and the entrance gateway, as well as the chapel above it. Although called a "castle," the house was nothing of the kind; it was not even strongly fortified, since there are no indications of either a drawbridge or portcullis. It depended upon its gates for preventing unwelcome access, and upon its moat, its thick walls, and narrow windows for security in other respects. It seems to have been of much greater extent originally, and to have occupied most of the area enclosed by the moat. Of the remains left, not many rooms can be identified with certainty. There is no doubt, of course, about the archway, which was the entrance; the small room on its right was probably the porter's, the large one on the left was perhaps the guard-room. There is nothing to show where the hall and kitchens were. It is equally certain that the room over the archway was the chapel, since the piscina still remains; and there was a gallery over part of the chapel, as indications exist of the gallery front and of the stairs of access.

The round tower, which has survived, was balanced by another at the other end of the front, which has completely disappeared, but it is impossible to say whether there was a tower at each of the other corners. The whole treatment of the place has a somewhat unfamiliar air, and it is quite possible that a foreign architect (shall we call him) may

have been sent from the Abbey of Peterborough, which is not very far distant. This place, also, has work of different periods. The original house was built in the closing years of the XIIIth century; the east wing was either built or remodelled in the XVth; the chapel was made into a living-room in the XVIIth; and in the XIXth many evidences of its previous history were blotted out. Not that it had much history attached to it. Only once did Woodcroft emerge from the obscurity which envelopes so many ancient places, and that was in the civil wars, when one Dr. Michael Hudson endeavoured to hold it against a force of Parliamentary troops. In spite of a valiant resistance, the defenders were driven from one stronghold to another until at last Dr. Hudson found himself fighting on the summit of the tower. He was overpowered and thrown over the parapet, but he clung tenaciously to the gargoyle which may yet be seen projecting over the waters of the moat. His assailants hacked at his fingers, and he fell into the moat below, whence he struggled to the land. But for some reason he was highly obnoxious to his enemies, who included many men from the neighbourhood, and it was one of the latter who struck the fatal blow when the indomitable doctor reached the bank. The incident has been utilised by Scott in "Woodstock," in which the character of the intriguing Dr. Rochecliffe was suggested by Dr. Michael Hudson.

Kirby Muxloe.

Nearly two centuries had elapsed before the next house of our series was built. It is at Kirby Muxloe, in Leicestershire, and is again wrongly called a castle (see illustration). Castle is was not, but a fortified dwelling-house, rather more carefully fortified than the former examples. Unlike them, it was not in continuous occupation for very long; there is no history attached to it, nor are there any contemporary records to throw light upon its origin or decay, but, judging by the excellent preservation of the little moulded work which has survived, it could not have been subject to the wear and tear of daily life for any great length of time. Unlike them, too, it is built of brick, but its mouldings are of stone. There is not an abundant supply of stone in that district, and what there is is hard to work; accordingly, the detail is large in scale. The actual remains of the house are not extensive, but the outline of the walls can still be traced, and they indicate that it must have been of considerable size. It was surrounded by a moat which washed the walls on every side, and the main disposition was almost truly symmetrical. This fact is interesting in view of the dominating part which symmetry played some century later when the Italian influence was becoming paramount in English design. The gatehouse is the most important feature left, and this consists of an archway, with a porter's room on each side, the whole being surmounted on the next floor by a large guard-room. There was a drawbridge and a portcullis. The recess into which the former was drawn up and the holes for the chains which raised it are plainly visible. So also are the grooves for the portcullis and the recess in the wall of the guard-room which contained it when elevated. These means of passive resistance were supplemented by others of an active kind, for in the flanking towers are circular orifices, through which the muzzles of cannons were thrust, a method of defence of which there are not many examples to be seen of this date, which is about 1480. The red brickwork is ornamented in places with a diaper of blue; a fashion which became very prevalent during the next century. Among the patterns which a patient scrutiny reveals are the letters "W. H." and a heraldic "manch," the initials and cognisance of William Lord Hastings, who, if tradition can be believed, built the house for the celebrated Jane Shore. It may be so, and in that case the strength of the defensive works seems to indicate that his lordship, having got the lady there, intended to keep her.

Stoke Albany.

Of about the same date, but rather earlier, is the interesting manor-house of Stoke Albany, in Northamptonshire, which, again, is only a small half of the original house. Its principal features are the windows, buttresses and entrance door on the main front. The doorway is a well-moulded, pointed opening, surmounted by two shields of arms, the forerunners of the heraldic displays with which the Elizabethan designers loved to adorn their porches.

To the Gothic period belongs also the quaint fireplace of a small farm-house in Somerset called Churchill Park, where the great oak beam is cut to form a flat-pointed arch, and is panelled with a quatrefoil and cusps (see illustration).

Influence of the Italian Manner.

So far, the houses which we have examined have all been Gothic in their treatment. We now come to the period when the influence of the Italian manner began to be felt. The change was gradual, more gradual than that from any one of the preceding styles to the next. The actual causes of the change of style in mediæval times have never yet been thoroughly explained. How was it that, within ten or fifteen years, the forms given to the ornamental parts of buildings should have altered so completely as to constitute a new and distinct style, and that the change should have effected work over the whole country at the same time? Where was the dictator of fashion located? And how came he, in those days of difficult communication, to influence simultaneously districts so far apart as Yorkshire and Devonshire, Norfolk and Cheshire? Whatever he was—Guild or Fraternity or Society of Freemasons—and wherever he existed, his ways were less sudden in the XVIth century than they were in the XIIIth, for, when the foreign forms had found a lodgment in England, they were by no means universally adopted, and the old traditional methods of work were retained side by side with the new for some thirty or forty years. The Italianising of English work was a slow process. It began in Henry VII.'s tomb, at the instigation of the King, his son, and it was more or less in court circles that the new mode was practised. One or two houses of the nobility built between the years 1520 and 1530, such as Layer Marney, in Essex, and Sutton Place, in Surrey, were strongly touched with the new influence. But even here the ancient ideas lingered, and Gothic work is to be found side by side with a rendering, more or less faithful, of Italian detail. Sutton Place is a case in point, where the main lines are still Gothic, while the applied ornament is of the Italian type. At the Vyne, in Hampshire, the linen panelling which covers the walls has curious new touches about it, and a Gothic-headed doorway is surmounted by a panel of thoroughly Italian feeling. The same infusion of foreign ideas is to be found in much, though not all, of the work of the first half of the XVIth century. At Deene Park, in Northamptonshire, for instance, it is visible only in the scrollwork attached to the coat-of-arms of Henry VII. At Clifton Maubank, in Dorset, the beautiful front had much of the new detail, while the bulk of the work was largely English. So fine a piece of work was this front that it was removed and re-erected at Montacute, and the remnant of the house at Clifton has but little of the new fashion about it. It is impossible to look at this house without noticing the bay window high up in the gable—a somewhat unusual position, but one which was copied at Montacute, and this feature serves to remind us what an important part the bay window played in the design of Elizabethan houses (see illustration).

The worthy masons of England were much exercised by the new fashion. Brought up in Gothic traditions, they found themselves compelled to adopt a style of ornament quite strange to them, and of which they did not grasp the underlying principles. Some of them were clever, some were merely honest plodders, and the result of their endeavours sometimes arouses admiration, sometimes amusement, sometimes pity, and sometimes, in unsympathetic breasts, contempt not wholly free from rage. At Dingley, in Northamptonshire, is one of the most curious examples of the good Englishman striving with these puzzling foreign fashions (see illustration). His arches are pointed, but they spring from Classic columns, his gablets assume strange outlines, and his Classic mouldings are diversified with curious Gothic beads, introduced in a manner which would have shocked Palladio.

The Growth of the Manor-house.

But we must return from this digression on style to the consideration of the growth of our manor-houses. By the time at which we have now arrived, halfway through the XVIth century, the fortification of houses had gone out of fashion; there was no longer need for it. Nevertheless, as it was difficult to get rid of old habits, so it was difficult to dispense with old features and old methods of planning. The courtyard idea lingered on long after the need for such a disposition had ceased. But, no doubt, the desire survived for keeping control over those who went in and out, and therefore the porter's lodge was still retained; and this was flanked in some cases by towers which preserved the appearance of those which in former days defended the gateway of a mediæval castle, although they no longer fulfilled the same functions. But, as time went on, so the defensive precautions grew less, and houses were made more and more cheerful. Windows were made larger, and placed without hesitation on outside walls. Prospect was taken into account, although it did not yet determine the whole position and arrangement of the house; the garden was cared for, and laid out with an eye to display; and the whole place was arranged with a view to a quiet, peaceful country existence. The development of this side of life may be well traced in such a house as Canons Ashby, in Northamptonshire.

The prevailing idea of the well-to-do squire was, like Dogberry, to have everything handsome about him. The body of the house was spacious, and, in obedience to the custom now well established, it was usually planned in a symmetrical manner. The walls inside were panelled, the ceilings covered with designs of greater or less intricacy, the chimney-pieces were made large and handsome, the staircases wide and massive. Heraldry was called upon to help in the decoration, and there are very few houses at all well preserved which do not reveal much of their history through the help of this beautiful and fascinating science, or art, should it be called?

The same general treatment was adopted in all parts of the country, and the result varied according to the nature of the local materials and the skill of the craftsmen employed. In districts, such as Lancashire, Yorkshire, and Derbyshire, where the stone is hard, and in Cornwall where granite was used, the detail is plain. In the Midlands it is often rich and elaborate. The plaster-work is sometimes admirable in design and execution. In remote places it is often puerile. Many of the smaller houses depend for their effect more upon their simple and picturesque outline than upon richness of ornament. Throughout all these years the plan of the house had been of the same type, namely, a large hall as the chief apartment, supplemented by rooms for the family at one end and rooms for the servants at the other. An adaptation of this idea on a small scale may be seen at Cold Ashton, in Gloucestershire, which also retains its forecourt and entrance gateway. The formal arrangement of the approach, even though on a quite small scale, as in this house and at Eyam, in Derbyshire, lends distinction and dignity not to be obtained by a haphazard arrangement.

Houghton Conquest, etc.

With the advent of the XVIIth century the Italian influence gained more ground, and began to affect not merely the detail, but the actual disposition of houses; and yet, side by side with this change, there lingered on the methods of fifty years before. At Houghton Conquest, in Bedfordshire (see illustration), is a house built for the accomplished Countess of Pembroke, "Sidney's sister, Pembroke's mother." You remember Ben Jonson's epitaph:—

> Underneath this sable herse
> Lies the subject of all verse,
> Sidney's sister, Pembroke's mother;
> Death! ere thou hast slain another,
> Learned and fair, and good as she,
> Time shall throw a dart at thee.

This house, built before 1621, the year of the countess's death, combines mullioned windows, with a very pronounced Italian treatment of the loggia; while at Ragdale, in Leicestershire, built by Sir Henry

Shirley in 1629-1631, is a hall which retains the far simpler treatment reminiscent of Elizabeth's days. In the same county is Stapleford Hall, where, at about the same time (1633), William, Lord Sherard, had rebuilt a wing in which he combined some ancient Gothic niches and statues with the gables and dormers which were characteristic of his own period.

The Advance of Formalism.

The change towards stricter Italian detail produced many interesting pieces of design, in which it is evident that the mason, although compelled to adopt the prevailing fashion, yet rebelled against giving up his ancient freedom in favour of strict rules, with a result both quaint and interesting. Such is the doorway of Cheney Court, not far from Bath. The advance of formalism and the change in the disposition of the accommodation of the house may also be seen at Chelvey Court, in Somerset, where there is no longer a central hall, but merely an anteroom leading to the living-rooms and the staircase. Here, although the plan has changed from the Elizabethan and Jacobean type, the porch and many of the windows are still of that style.

Formalism continued to increase as the years went by, especially in the larger houses, but in those of the manor-house type it was restrained chiefly on account of expense; and the simple forms of the XVIIIth-century house are nearly as pleasant to look upon, and harmonise as well with the English landscape as the mullioned houses of a hundred years earlier. They frequently exhibit a little play of fancy in parts of the design, although in the nature of things the increased deference paid to set rules precluded those unrestricted flights which are so charming a characteristic of earlier and freer days.

Gardens.

But if the houses offered less scope for the imagination, the garden gave it a wide range, and we owe to the XVIIIth century some of the most charming designs for the surroundings of the house which could be desired. This is not the occasion for pursuing that branch of design at any length, but, broadly speaking, all the most delightful old gardens, with their straight walks, their clipped hedges, their statues, lead vases, and pleasant summer-houses, were laid out in the early years of the century before last. Not that the XVIIth century neglected this part of the process of making a home—not at all. The Parliamentary surveys of the houses belonging to Charles I. give dry, formal descriptions which the imagination can easily expand into the most glowing pictures. Sir William Temple was a great gardener. Numberless examples might be mentioned of splendid lay-outs—Hampton Court, Boughton House, Badminton, Wrest; but these are much vaster in scale than our manor-houses, and many of them have been destroyed. We may fairly say that the high-water mark of beautiful gardening was attained in the first quarter of the XVIIIth century. We have already seen one example at Canons Ashby, and must content ourselves on this occasion with a brief glimpse into the lovely garden at Melbourne, in Derbyshire.

Such is the all too brief and superficial account of the old manor-houses of our English counties. But to those whose work lies in great cities it may, with its illustrations, have brought a welcome breath of country air; to those whose feet are still on the threshold of our noble art it may have offered a transient view of the by-paths which lie waiting to be explored in the vast domain upon which they are entering—by-paths, the pursuit of which will at once enrich their imagination and afford a welcome relaxation from their sterner duties."

Mr. H. D. Searles-Wood, in proposing a hearty vote of thanks to his old friend, Mr. Gotch, said that papers of the kind were most useful, for they not only refreshed the memory of many a pleasing jaunt, but they also pointed a moral which all could take to heart. Would Mr. Gotch tell them what is the heraldic device he referred to as a "manch," and what was Cardinal Wolsey's cognisance? It had always been a matter of great regret to him that there was no handbook which gave in a succinct form all these cognisances—a little book such as one could carry about. The only cognisance he knew was that of the Hungerfords, which consists of a wheatsheaf between two sickles. It was astonishing how many of the old houses of England have the cognisances of this family or one or other of the great families, showing how wide these family interests spread. As to Barrington Court, which was still in the market, it was a pity that such a lovely place was not to be preserved.

Mr. S. Flint-Clarkson briefly seconded the vote of thanks.

Mr. Matt. Garbutt said that in one of the gatehouse views which Mr. Gotch had shown them there were some small loopholes, and these, they were told, were intended for the use of cannon. Would Mr. Gotch give them his reasons for so confidently asserting that those holes were for cannon, and not for smaller weapons? They were exceedingly small for cannon.

Mr. John Murray said that, whilst looking at the views they had seen, he had been particularly struck by the simplicity of most of the designs and the amount of restraint which they exhibited. These were points which might well be copied by modern architects, and he suggested to students that they might take a lesson from them. The subject of manor-houses deserved careful study, and the paper would assist them in their work.

Mr. W. A. Forsyth said that the subject did not admit of much discussion. Mr. Gotch had made it his own, and he treated it in such a way that no one could contest what he said. As to the settings of the houses, very often one was shown these buildings and was not allowed to see the scenes in which they were set, and it had been a great advantage to see Mr. Gotch's views. More than that, they had been able to study a number of places which they had not seen before, but which now they were anxious to visit. They were always pleased to see Mr. Gotch amongst them. Mr. Gotch never refused to read a paper before them when asked to do so.

Mr. H. P. G. Maule said that Mr. Gotch had not said much as to the development of plan, and it would be rather interesting to know the lecturer's views as to whether the plan of these manor-houses was evolved from the smaller houses upwards or from the larger houses downwards—whether they commenced with the hall and two rooms on either side and gradually extended that, or whether the large castle or bigger house was cut down. He thought that, in many cases, the idea was suggested that the house had grown from the nucleus of a hall and a kitchen and perhaps a solar on one side and perhaps two or three bedrooms, and that that had gradually increased until we got the courtyard plan. It was rather interesting to know something as to the plan, for one constantly found in quite small houses—in the small yeoman houses in the midst of Kent, for instance—the big hall and two rooms, and very little evidence of more, and he thought that type of house had existed from very early times indeed.

The Chairman, in putting the vote of thanks, said that they had had an exceptionally interesting paper, and they were indebted to Mr. Gotch for it, and also for the views of so many out-of-the-way houses. He could not agree that there was not much scope for discussion, for, in his opinion, the paper was full of points for discussion, and it was not possible for him to touch on more than one or two of them. One point raised had always exercised his mind, and that was how far the beauty of these old manor-houses was attributable to actual design or to haphazard methods of building? Mr. Gotch put it down to the haphazard way they had of building—they added on to their buildings just as they required to make additions, and what was added happened to make a picturesque whole. But there was another point to bear in mind, and one which had governed, to a great extent, the planning of perhaps the courtyard arrangements of these old manor-houses. He spoke with a good deal of experience and knowledge of these buildings in Warwickshire and Gloucestershire, and he thought the plan had been governed by the way the builders had been forced to roof the house. They commenced with one small hall probably, and when they wanted to add to the building they did not double the size of the hall, but they added on a piece at either end. It was just like a game of dominoes. If rooms were required, they did not necessarily extend the ends of the building, but a turn was given, and so gradually a courtyard was formed, and so in time the picturesque effect was secured. In all the plans and views they had seen every wing had a single span; the builders could do only single span roofs in those days, and that fact determined the plan of some of the later manor-houses. And we knew how material affected them and how it affected detail. The old builders—they were not architects, of course—were very loath to let go the old traditions and habits, which they had been practising for years, and take up new ones. Changes were always found in the entrance doorways, in chimney-pieces, etc., and it was generally in the doorways that they tried their 'prentice hands. They kept to the old traditional lines as long as they could. In Mr. Gotch's book on the Renaissance there was a well-known example—a doorway at Aylesford Hall, where was to be seen the Gothic head and the classical label, and the whole district teemed with details like that. In one house was an old Georgian or Queen Anne doorway, and the windows at the sides were treated as mullions, with square heads.

The vote of thanks was put and carried heartily.

Mr. Gotch, in reply, said it was a great pleasure to come among them and to keep in touch with a body with which in years gone by he was much associated and in which he then took a much more personal interest than was possible now that his residence was a considerable distance from London. A paper like his did not afford much opportunity for discussion, for it was historical rather than controversial. A "manch" was an heraldic term for a long sleeve, of the XIVth century, which fell from the arm. Mr. Searles-Wood was right in saying that in many old manor-houses one met over and over again the cognisances of some of the principal families of the times. He understood that Barrington Court was in the market, but he believed that an appeal had been made by the Society for the Preservation of Places of Natural Beauty for funds to enable them to purchase the building. As to the cannon openings at Kirby Muxloe, the orifices were about the size necessary to accommodate cannon of that day, and they were two or three feet from the floor inside—quite a convenient height for cannon and not convenient for shot guns. The openings were not intended for arrows, the openings for these being in the form of long slits. Probably the cannon of those times would not shoot more than 200 yds. As to the development of the plan of the house, he agreed with Mr. Maule in thinking that these houses began from a small type and worked upwards. The original house consisted of a hall for the family and a room for the lord and the kitchen department at the other end, which was often built of wood, and in many cases had entirely disappeared. As the desire for comfort increased, more and more bedrooms and other rooms were built, and the plan then expanded at each end—one end for the family and the other for the servants, and, as time went on, that developed into the courtyard plan. For defensive buildings like Barnwell Castle, there were surrounding thick walls, fortified by towers in certain places, particularly at the entrances, and very interesting buildings they were in many cases. What we see now of buildings of that kind was only the defensive parts. He agreed with what the Chairman had said as to design, but he could not think that the builders paid anything like the attention we do to appearance. They built from hand to mouth, so to speak; they built constructionally, not because it was picturesque, but because it was a good way of building according to their lights, and, as it often happened, the carrying out of work on constructional lines often resulted in something good and pleasing to look at, and it was so in regard to many of these old manor-houses.

The meeting then terminated.

The next meeting will be held on December 1, when Mr. E. F. Reynolds will read a paper on "Turkish Architecture," illustrated with lantern views.

THE ROYAL SANITARY INSTITUTE.

On Tuesday last week a discussion took place before the Royal Sanitary Institute at the Parkes Museum, Margaret-street, W., on the subject of "Rural Housing," Col. J. Lane Notter presiding. In our last issue we gave a report of the remarks made by Dr. J. F. J. Sykes.

The Cottage Exhibition, Letchworth.

Mr. T. W. Aldwinckle, who followed, described at considerable length the cottage exhibits at Letchworth, in the course of which he said that it would be necessary at the outset to set up some standard by which to judge the character of the various exhibits, and to consider what were the essentials in a cottage which, costing to build 150*l.* or thereabouts (prime cost), should be suitable for an agricultural labourer paying a rent of 3s. per week. In the first place, for the purposes of economy in construction, the cottage should be a simple, rectangular, self-contained building, with a simple span roof, free from cross gables, dormers, and other breakings up of the roof-line (however artistic they might appear), as well as all bay windows and other projections. This was laying down a drastic law, but the exigencies of cost must be paramount. The eaves of the roof should have a projection of 12 in. or more to protect the walls from rain. Some of the competitors placed the upper story wholly in a mansard roof, which was a somewhat cheaper arrangement than brick walls, but there would be some lack of warmth in the bedrooms. It must also be borne in mind that this class of tenant had but little to spend on fuel; therefore the windows must not be large, and the external walls must be of a material and of a thickness capable of excluding cold and damp. Some of the cottages in the exhibition had external walls of 4-in. timber framing covered externally with plaster or weather boarding, others with thin plaster or concrete slabs (say, 3 in. or 4 in. thick), while others had windows out of all proportion to the size of the rooms. To keep these cottages comfortably warm would require an amount of fuel quite beyond the means of the labourer. Yet this matter could not be ignored. Warmth was of vital importance in a cottage home. As regards the accommodation to be provided, there were required a living-room, scullery, and three bedrooms. A third room, or parlour, was quite unnecessary. It added to the cost of the building, and was only used on rare occasions. If a parlour was provided, the living-room was reduced in size, and, after all, this latter was the room in which the family passed most of their time. This living-room should be the largest room in the cottage, with not less than 160 ft. floor area, and should have a small range (with oven, but no boiler), a well-made one, but one economical in fuel. In the winter the cooking would be done in this room. There should be a dresser or cupboard dresser. Through ventilation was desirable for this room, if possible. The floor should be of red tiles, not wood; the latter could not be kept clean and sweet. If the floor of the living-room was of wood, the floor-boards should be nailed down direct to the concrete, which should have a layer of hard core under it. In one cottage there was a cement margin round the room a few inches wide, an arrangement which prevented the damp from reaching the floor-boards. The entrance to the cottage should be through this room; not direct, but through a lobby, and a north or east aspect for this entrance should be avoided. There should be a good-sized stone or tile threshold outside the entrance, and a pent roof over. It was important that this living-room should be a comfortable one to live in, and that it should be free from draughts from doors, etc. In some of the cottages exhibited the living-room had as many as four doors, without a single comfortable corner. The scullery should have a floor area of not less than 80 ft. It should have a small range for cooking in summer. Means should be provided for removing the steam rising from the copper. If there was a bath it should be in the scullery, and it could have its hot-water supply from the copper. The cottage taking the first prize had no bath, and it was more than likely that the cottager would prefer a more primitive arrangement. In some of the cottages there were provided a combined model cottage range, copper, bath, and hot-water supply, which would cost at least 15*l.*, or one-tenth the whole cost of the cottage. It was advisable that there should be the means of getting from the scullery to the bedrooms on the upper floor without passing through the living-room. This did not mean that the stairs should lead direct from the scullery or from the living-room, as this allowed the steam and vitiated air from the ground floor to ascend into the bedrooms. There was much to be said in favour of an outside wash-house, so that the washing could be done without the steam entering the cottage. The cottages built by Lord Carrington on his estate had this arrangement. All this, however, tended to increase the cost. Every cottage required a back door, and this should be in the scullery. The door should lead to a roofed lobby open at one end or side, so that from this lobby access could be had to the coal store and water-closet. This gave sufficient air separation to the latter, while it could be approached under cover, which was desirable in bad weather. It was important that the water-closet should not lead direct from the interior of the cottags. It might be considered desirable that where there was an earth-closet the access should be wholly external and not from a lobby, or even that it should be an outbuilding. Wherever the access to the closet, coals, or wash-house was wholly external, there should be a paved way leading to same, of tiles or other suitable material. A coal store and a properly lighted and ventilated larder were required (both of only very moderate size). The larder should lead from the scullery. Where the coal store also leads direct from the scullery, there should be some external means of getting the coal into the store without going through the scullery. The stairs should not be steep, with not more than one set of winders, and should have a hand-rail, also a window (to open). It was preferable to have all the bedrooms on the upper floor. In the first place, it was more economical in construction, as all these rooms could be partly in the roof. It was also more convenient for family purposes, as if one bedroom was placed on the ground floor the children sleeping there would not be under parental control. It was only fair to state, however, that there were several very good cottages in the exhibition which had a ground floor bedroom. When these bedrooms were much in the roof the windows should be in the side gables, so as to avoid dormers. It was advisable that the parents' bedroom should communicate directly with one of the other bedrooms, to allow of the supervision of the very young children. The position of the bedstead had apparently not been considered by many of the competitors. The ground floor should not be less than 7 ft. 9 in. to 8 ft. high from floor to ceiling. There did not appear to be any advantage in increasing the height by exposing the joists over. A flat ceiling was certainly more sanitary. For the bedrooms, when partly in the roof, the mean height should not be less than 7 ft. 9 in., with vertical wall not less than 5 ft. in height. Reference had already been made to the size of the windows. It was advisable that they should be near to the ceiling in all rooms, and if a part of the upper portion could be made hopper fashion, so as to be kept open at night, so much the better. A large amount of cupboard space was not desirable. A food larder and cupboard dresser should be sufficient. Other cupboards only mean dark places difficult to keep clean. It was preferable to put in bedrooms and elsewhere a good deal shelf, with a deal rail under having a few good cloak hooks. Unventilated and dark spaces under the stairs were most undesirable as cupboards. The internal finishings must necessarily be very simple and inexpensive. All walls should be plastered internally, except the coal store and possibly the larder, and all salient and internal angles in same should be slightly rounded. Wall papering was undesirable in any case, distemper being preferable. Skirting boards were undesirable, as the space behind them harboured vermin. A cement skirting was preferable. There should be no wood floors to the ground floor story, unless there was a bedroom. Well-made ledged doors hung with strong purpose-made strap hinges (not ordinary cross garnets) were sufficient, except perhaps for the front entrance-doors. A plain rounded architrave would be sufficient. The internal reveals of the windows should be in plaster and rounded with a deal head and window-board. The utilisation of the rain water was very important. This was usually collected in water-butts, which eventually became very foul. In one of the exhibited cottages the rain water had been collected into an external iron tank placed about the level of the first floor, and was then "laid on" to the sink, copper, and bath. In external appearance there should be the true "cottage" character. This need not be costly; simplicity itself would do a great deal. One competitor stated in his description, "We have found that a few years' growth of shrubs and creepers quite eclipses men's efforts at decorating exteriors." The last, and by no means the least, essential was that the cottage should be substantial and permanent in character, to such an extent, indeed, that private individuals erecting them could borrow money upon them on mortgage.

As to the question of one-story and two-story cottages, there was, of course, a good deal to be said on both sides. In a one-story cottage the cost of the stairs was saved, and the foundations could be slighter. On the other hand, in two-storied cottages the rooms on the ground floor were undoubtedly warmer by reason of having rooms over them, and the bedrooms are not open to the objection of being close down to the ground. One great objection to a one-story cottage was that it occupied considerably more land, and required, therefore, more frontage. It would seem preferable, therefore, to build these cottages of two stories, and also to build them in pairs. This arrangement, which was perfectly consistent with a good plan, saved one main wall in two cottages, and also gave each cottage three external walls instead of four, thus saving fuel in warming the rooms. The width of the garden was not limited to the frontage of the cottage, and could be as much more as might be desirable. When the amount available was very limited, the cottage in pairs was almost a necessity. Of the cottages exhibited in Classes 1 and 2, only a few came within even a "measurable distance" of being erected for 'a prime cost of 150*l.* Of a large number it must be said that they could not be built for 250*l.* Some of the competitors, indeed, seemed to have been perfectly reckless as regards cost, aiming only at producing artistic buildings or cottages of such a size and of such internal and external finishings as would render them only suitable for week-end middle-class bungalows, or, at the least, for artisans' dwellings with a rental of 6s. to 7s. 6d. per week. A great deal of the exhibition was thus very misleading in this respect, and was calculated to produce a false impression on the public mind, which might do harm rather than good to the cause in the interest of which the exhibition was projected. As a matter of fact, several of the cottages were already let at rents considerably exceeding 3s. per week.

The building which had obtained the first prize in Class 1 was a simple rectangular self-contained building of the pure cottage type, of a distinctly substantial and permanent character, and undoubtedly deserved the award which it had obtained. The architect is Mr. Percy Houfton, of Chesterfield. "The cottage comprises living-room, scullery (no parlour), and three bedrooms. The front entrance is through a lobby which leads to the living-room. From the living-room we reach a central (well-lighted) lobby which gives access to the scullery and to the stairs. The living-room is 18 ft. by 12 ft. (extreme dimensions), the actual floor area being 194 ft., and has a good window at each end, thus providing cross ventilation. This room is so planned that it will be bright and comfortable, and free from draughts from doors (there are only two doors in the room). There is a good range (rather too large), and an excellent cupboard dresser. The fireplace has a semi-circular arch in salt-glazed bricks, and looks very well. The floor is of tile quarries. The scullery (12 ft. 3 in. by 7 ft. 6 in.) has a copper, sink, and 'working bench' under the window. There is no provision for getting rid of the steam from the copper. One thing is wanting in the scullery, and

that is a small range for use during the summer; there is ample room for this. There is no bath. There is room in the scullery for this. The back door leads from the scullery to a roofed lobby with open end, giving access to the water-closet and the coal store. The door of the water-closet might with advantage have been placed nearer to the open end of the lobby. A well-lighted larder leads from the scullery. The whole of the ground floor, except the living-room, is paved with granolithic cement. The stairs are good and well lighted. The window originally did not open, but, apparently in consequence of criticism, this has been rectified, although the opening is a very small one. The arrangements on the ground floor are such that access to and from the scullery and the bedrooms can be obtained without passing through the living-room. The first floor is very well planned, there being no wasted space. The bedrooms are, respectively, 18 ft. by 10 ft. 8 in. (extreme dimensions), 12 ft. by 9 ft., and 8 ft. 9 in. by 8ft. 9 in. Two of these have a fireplace. All are good and well lighted. The total cubic space of these bedrooms is 2,700 ft. The ground floor is 7 ft. 9 in. high, and the upper floor 8 ft. to the ceiling, and 6 ft. 3 in. to the wall plate. The internal finishings are simple and suitable. All the walls are plastered internally, except the coal-cellar, and the salient angles are rounded. The internal doors are ¾-in. ledged, well made, and hung with very good wrought-iron strap hinges, with latches and pins. The windows, which are not too large, have casement sashes with good fastenings. All the rooms have deal skirtings and picture rails. There are deal rails and cloak pegs in the scullery and inner lobby. There are ventilators in all the chimney breasts. The rooms are finished in 'Duresco' distemper. The interior is cheerful and pleasing throughout, and there does not appear to be a dark corner anywhere. The external walls are of 9-in. brickwork covered with rough-cast, limewhited. The foundations are of brickwork twice the thickness of the walls. There is a layer of concrete 6 in. thick under the whole internal area of the building. The roof is a simple span roof without dormers and with good projecting eaves, and is covered with local plain tiles. The aspect of the front door is north-west. A pent roof over this door would be an improvement. Externally the building looks like a cottage. There is one defect in the plan, which is apparently unavoidable in a building designed on these lines, and it is that fireplaces cannot be grouped together inside the building, but are, on the contrary, in the external walls, thus involving wasteful loss of heat. The area of the cottage is 478 ft., and the cubical contents 10,272 ft. The cost per cubic foot is 3½d. It is interesting to note that this cottage, which is undoubtedly a good and cheap one, could be erected in any district without infringing the by-laws, except as regards the height of the rooms, and a few minor details. As regards cost, the judges state that they are satisfied that this cottage has been erected for the stipulated sum, and this, therefore, cannot be questioned. But it may be safely inferred that in some other district, and under other circumstances, the cost would be somewhat higher. Nevertheless, it may be put down as the best and one of the cheapest cottages in the exhibition. There appears to be no reason why this cottage should not be erected in pairs, with a reduction of about 12*l.* for each pair."

Mr. Aldwinckle then described other prize designs, as well as others of a good and suitable type, after which he referred to Lord Carrington's cottages, which had been erected at an average of 156*l.* 13*s.* each.

"They are two-storied cottages built in pairs, and comprise living-room, kitchen, wash-house, and three bedrooms. The living-room, 12 ft. by 8 ft., is entered from a lobby, which also leads to the stairs. There are a mantel register and a cupboard. The kitchen, 12 ft. by 11 ft., has a self-setting range and a cupboard, but no sink. The pantry leads from the kitchen. There is no bath. The wash-houses are ingeniously arranged one behind the other at the rear, as also the fuel store and earth-closet, the last-named being to the rear of all, and some distance from the back door. There are a copper and a sink in the wash-house. Access from the kitchen to the bedrooms can only be had by going through the living-room. There is one large bedroom and two small ones, the latter without fireplaces. The windows to the small bedrooms are rather small. The ground-floor rooms are 8 ft. high, and the bedrooms 9 ft. to the ceiling, and 6 ft. 3 in. to springing of roof. The external walls are of 9-in. brickwork, and the roofs are slated. The roof is a single span one without dormers. The floors of kitchen, wash-house, and pantry are paved with 6-in. square red tiles on 3-in. concrete; the fuel store and earth-closet with white bricks on edge in sand. The living-room has a deal floor on 4-in. by 2½-in. joists or 4-in. by 4-in. oak sleepers. There does not appear to be a layer of concrete under this, and in this respect the requirements of even the Model Rural By-laws would not be satisfied. The interior finishings are all good and suitable. The staircase has a handrail, and is properly lighted. The fireplaces and chimneys are grouped together in the centre of the pair of cottages. There is a pent roof over the entrance door. These cottages may be described as exceedingly good and cheap. The area of the pair is 1,060 ft. The erection of these cottages, forty-three in all, has been spread over twenty-four years, the last pair having been built in 1897. It is interesting to note that the latter cottages were cheaper than the earlier ones, the last pair costing only 288*l.* This includes contractor's profit, which the Letchworth cottages do not. As the cubical contents are 18,560 ft., this works out at 3·13d. per ft. cube."

As to the exhibits in Classes 1 and 2 at Letchworth, no striking novelty in construction had been produced. With the exception of a few cottages, which had their external walls of concrete of thicknesses varying from 7 in. to 10 in., there were practically no suggestions of any real value as regards new materials or construction for external walls, and thus we had only a choice between brickwork and concrete. External walls of open timber framing, or of thin plaster or concrete slabs, were quite out of the question in this climate. It was plausibly said that many of the old cottages were of wood and were very comfortable. No doubt they were. The windows were very small, seldom open, and there was no attempt at ventilation. Nowadays circumstances were very different. The windows were larger, ventilation had to be considered, and a cottage with thin external walls of whatever material could not be kept comfortable (*i.e.*, warm) in winter without a great expenditure of fuel. As to durability, it must be obvious that walls of timber framing or very thin slabs of plaster on concrete could not be considered permanent in the true sense of the word; nor the class of construction upon which money could be borrowed. Again, the cost of repair must be considered. Cottages built of slight and perishable materials would cost a serious amount per annum for their upkeep. As to fire, some of the timber cottages in the exhibition were mere tinder boxes. We thus get back to either the brick or concrete wall. In those districts where good ballast could be obtained on the site, it was possible that a 9-in. concrete wall would be slightly cheaper than a 9-in. brick wall, but it was very doubtful whether the small economy would outweigh the undeniable advantages of brickwork. We apparently came, then, to the conclusion that, all things considered, a brick wall was most suitable for these cottages. The thickness must not be less than 9 in., and an 11-in. hollow brick wall was preferable (No. 69, which had taken the prize for the cheapest cottage, had this). In any case, the brickwork should be covered with rough-cast, as an additional protection against the weather. This external covering was even more necessary for a concrete wall. The all-important question, however, and the one which it was the object of this exhibition to solve, was that of cost. Can a cottage of the type of No. 14 (prize-winner) be built for a prime cost of 150*l.*? Here, again, the question of locality came in. At Letchworth building materials appear to be very cheap, espceially bricks, and this, no doubt, accounted for the fact that the judges reported that they were satisfied that this cottage had actually been erected for the stipulated amount, which, in this case, worked out at 3½d. per foot cube, the cubical contents being 10,272. This was a low price even under favourable circumstances, but it was higher than the cost per foot cube of the most recently built of Lord Carrington's cottages; so that there was some reason for believing that it was possible to erect a cottage, or, at all events, a pair of cottages, for something near the stipulated amount.

The cottages at Letchworth had been built under the rural by-laws of Hitchin. These were practically the model rural by-laws of the Local Government Board. Under these there are no stipulations as to the materials or thickness of external walls (except as regards basements); consequently ordinary timber and framing, thin concrete or plaster slabs, plastering on expanded metal, and, in fact, any material, however thin or poor or unsuitable, could be used in building these cottages. There are, however, in these by-laws important regulations as to concrete over damp areas, damp courses to walls, copings to parapets, open spaces at rear of the buildings, the provision of suitable windows, ventilation under boarded floors, ventilation of rooms, drainage, water and earth closets, ash-pit cesspools, and the submission of plans to the local authority. The result of this freedom in relation to wall construction had been that a large number of cottages had been erected under these by-laws with external walls which were neither durable, permanent, damp-proof, or in any satisfactory degree capable of excluding the cold; to say nothing of the highly inflammable nature of some of the erections. Strangest of all was the fact that the cottage which had obtained the first prize was a brick-built structure of a distinctly good and permanent character, which could, except as regards, perhaps, the height of the rooms and a few minor details, have been built under most of the so-called prohibitive by-laws of other urban district councils. This was a most interesting and instructive object-lesson, showing that these much-abused by-laws were not necessarily an obstacle to cheap (and good) cottage building. What was really required was a more reasonable and intelligent administration of these by-laws, conceived in a sincere desire to assist rather than obstruct those who were honestly striving to do good work.

Mr. Alderman Thompson (Richmond) said the question which had been asked, "Was it possible to build a cottage for 150*l.* for an agricultural labourer," had again been answered in the affirmative by the exhibition at Letchworth and the cottage building of Lord Carrington. He wished to emphasise the fact that the cottages at Letchworth were not confined to agricultural labourers' cottages, and, indeed, if they took the total number of labourers who were badly housed, the agricultural labourers would be in a small minority. The thing aimed at by the exhibition was to build cheaply, and it was not reckoned to be an exhibition of model cottages. There was no doubt but that the great majority of cottages had been built under the favourable conditions which existed at Letchworth for less than 150*l.* Some of the buildings were merely put up to advertise certain materials and probably cost more than the 150*l.* He agreed that, so far as Letchworth was concerned, that brick came out on top. It was a fortunate thing that bricks only cost 24*s.* a thousand delivered on the spot, while at Richmond they cost a great deal more. As to the cottage which won the first prize, it looked as if it had been taken out of a terrace, and that accounted for the chimneys being at the ends, which, he thought, was an unsuitable position. He felt that Mr. Aldwinckle had been somewhat sweeping in his remarks as to cost, for he knew that the Tenants' Co-operative Housing Council's cottage, No. 47, was built for less than 150*l.*, while Mr. Cadbury's cottage actually cost 138*l.* Where the exhibition had gone into hot-water was with the concrete brick cottage, which was not, however, put in as a cheap cottage. With regard to by-laws, he would point out that they were now allowed to build an attic in the roof on a 9-in. wall although he did not suppose many local authorities had troubled to alter their by-laws to meet that. Further, the bringing of the party wall through the roof was now entirely optional. These were modifications which tended to reduce the cost. He believed much was required in regard to the modification of the by-laws where reinforced concrete was used, for 14-in. walls were now required with concrete. He would like to

know if there was any advantage in having a room higher than a man could reach, for his own view was that it would be a greater advantage to give the extra brickwork in a larger area. Another important thing was that they had asked the originator of the exhibition to get the contract bills of quantity for the cottages so that they could know what was the minimum amount of materials required to get the greatest amount of cubic space, and so give them a guide to the use of the cheapest material.

Miss Cochrane, speaking for the wives of agricultural labourers, many of whose homes she had visited, said the first thing nearly all the women asked for was three bedrooms. Then they wanted a fire in one bedroom only, a large kitchen, living-room with good grate for cooking, and a good sized larder. They did not ask for a scullery, but asked that the second room downstairs should be a parlour. They also wanted a handrail to the stairs, and only one large window in each room. They all asked for sash windows, and wanted a porch. Their longing seemed to be to have the parlour on one side, the kitchen on the other, and the stairs straight up. If they had a quarter of an acre of garden there would be no need for expensive systems of drainage which always got out of order. Most of the women she had seen did not want baths.

Dr. Woodforde said that to the outside public the exhibition at Letchworth was somewhat misleading. The cottages were supposed to be built for 150*l.*, but many things were excluded which would add considerably to the expense. A friend wrote to some of the builders asking what they would duplicate the cottages in his district for, and scarcely one was prepared to build for the same price. In one case 88*l.* 17*s.* 5*d.* was required for extras. It must be borne in mind that Letchworth bricks cost only 24*s.* a thousand, but in his immediate neighbourhood bricks cost 30*s.* a thousand. Then the site was very favourable for cottage building, for they had a good chalk soil, which did not require much foundation. With all respect to the builders also, he would like to see the condition of these cottages after they had been up a few years. With regard to rural by-laws, his feeling was that they were necessary, not for the coercion of the good landlord, but to prevent the bad landlord putting up bad houses. Dr. Woodforde produced plans of cottages erected in pairs in East Berks, each containing six rooms, and erected according to the model by-laws, and costing 300*l.* the pair.

Miss Gurney explained the objects of the Tenants' Copartnership Building Council, which was to encourage thrift and self-reliance. Associations were formed of persons prepared to develop a piece of land in the interests of themselves as the persons who would live there. They naturally provided as big gardens as possible. Their idea was to get different classes into one community, and thus prevent the formation of new slums in the suburbs.

Mr. C. Hare said that, speaking as an architect, he believed many of the houses at Letchworth could be built for 150*l.* They had learned a number of things from the exhibition. They learned that a square plan was the cheapest, and that chimneys in the centre of the house were an advantage, for by this they got heat all over the house. A gentleman had referred to no external architectural excrescences being required, and it was certainly not necessary to put ornament on a building to make it beautiful. If they got proper proportions it would look well, and in the country they could easily obliterate ugly architecture by a few shrubs. They had also learned something with regard to ventilation. In planning he always showed the position of the bed. Concrete was the cheapest form for non-combustible building material, but the by-laws of most places made it impossible to use it. As to Mr. Thompson's suggestion of a skeleton bill of quantities, he agreed that it was impossible to judge two plans unless they had the quantities of brickwork in each case.

Mr. Powell, speaking also from the architectural point of view, said one of the plans showed two cottages with a combined lobby, and he thought that objectionable. Then where the bath was in the scullery some means should be provided for shutting the bath off and making a separate room. Staircases ought to go straight from the lobby, and access to them ought not to be obtained through the living-rooms. He noticed that many of the plans showed a mass of angles, which always added to the cost. Every bedroom should be sufficiently large so that the bed was not put against the wall. Besides the economy of having flues in the centre of the building, it warmed the house all over. Concrete walls were very good, but he hoped they would not have a lot of cement work outside. He felt that it was impossible to build a good substantial cottage for 150*l.* if they were to include builders' profits, architects' charges, and water and drainage, which, he believed, were things not included in the Letchworth cottages. It depended a great deal on the local material at hand. In Oxfordshire he had seen chalk cottages 200 years old, but when once a chalk house began to go it tumbled down like a pack of cards. A quarter to half an acre of garden was necessary. He had seen the houses being put up by the London County Council at Tottenham, and he questioned whether the Council was doing the right thing. The people would have to come to London to their work, and they would all want to come at the same time, and it struck him that the thing would be a failure. The speculative builders could not fall back on the rates, and the result would be that the County Council would be able to keep the houses up and get the best tenants, while the other houses would be let to people coming from the slums.

The Chairman said it seemed to be the generally accepted opinion that these houses could be built for a reasonable sum, depending largely upon the locality in which they were built. If they did not get perfection in these houses they were going a long way towards it without incurring great expense.

Dr. Sykes, replying to a vote of thanks, hoped that they would make a higher standard of sanitation in cottages than was adopted by the Local Government Board. A cottage which lasted 200 years and then fell down he looked upon as an ideal cottage.

Mr. Aldwinckle said there was no objection to the arrangement of the parlour and living-room each side of the lobby, but he would not like to say offhand that it was a better arrangement than the successful plan. He felt that, while it might not be possible to build many of the cottages for 150*l.* on other sites, yet a number of them could be built for a price nearly approaching it.

NELSON COLUMN, TRAFALGAR-SQUARE.

DURING the recent commemorative decoration of the column the opportunity was taken to again examine the condition of the fabric. It is found that the column is in need of being repointed, and that the arm of the figure is cracked, though not very seriously, above the elbow. The necessary repairs will be executed by the Office of Works, and the capital of the column, which was filled with pigeons' nests, will be cleaned. The column was built, in 1839-52, by W. Railton, who, in his design (chosen in competition in January, 1839), followed the proportions of a Corinthian column of the Temple of Mars Ultor, at Rome. It is constructed of granite from Foggin Tor, Devonshire; the graduated stylobate of the pedestal rests upon the frustrum of a brickwork pyramid, 48 ft. square at base, and 13 ft. high, which is supported by a 6-ft. layer of concrete in a stratum of clay about 12 ft. below the surface; the contractors, Grissel and Peto, devised a special form of scaffolding for the building operations. The capital was cast from old guns in the Woolwich Arsenal foundry from full-sized models prepared by C. H. Smith. No plugs were fixed into the work, the foliage being secured to the bell of the cap by means of three large metal belts laid in grooves. The statue, carved by E. H. Baily, R.A., and with scrupulous care in every detail, is in two blocks of Craigleith carboniferous sandstone, given by the Duke of Buccleuch. With its plinth it measures 17 ft. in height, and was raised on November 3-4, 1843. The column is 145 ft. 6 in. high to the top of the capital; its diameter increases from 10 ft. 1¾ in. at the base to 11 ft. 7½ in. at the summit. The four bronze reliefs are by W. F. Woodington —Battle of the Nile; C. E. Carew—Death of Nelson; J. Ternouth—Bombardment of Copenhagen; and Watson and Woodington—Battle of St. Vincent. The column cost 23,000*l.*, the statue, capital, and reliefs cost 5,000*l.*, and Railton was paid 2,000*l.* The four lions, by Sir Edwin Landseer, R.A., were uncovered on January 31, 1867. His studies for the lions, first sketched in the Zoological Gardens, were bequeathed by the late Mr. T. G. Hill to the National Gallery. In Ternouth's bas-relief, on the east side, the figure of the sailor supporting a wounded boy is modelled after the figure and features of Thomas Hopper, architect. Some minor repairs of the stonework were made in 1896, upon a report by Mr. Harrison, the "steeplejack," of Sheffield. Mr. W. Larkins made the present initial examination of the structure.

ARCHITECTURAL SOCIETIES.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—The opening general meeting of the Leeds and Yorkshire Architectural Society was held on the 16th inst. at the Queen's Hotel, Leeds, when the Presidential address was delivered by Mr. G. Bertram Bulmer, who pleaded, in the course of his remarks, for control of the advertising "fiend." He said:—"Perhaps the greatest destroyer of our architectural efforts is the advertising fiend, whose emmissaries are overrunning every corner of the city and suburbs. No place is safe from their encroachments. The main streets of the city, the highways which lead to and from it, the country lane—once sacred to rural beauty—are alike desecrated by the advertisement hoarding and the flaring lettering of the self-seeking advertiser. This growing nuisance must be controlled, and town and country authorities have more power to deal with transgressors. Owners of property also could assist by prohibiting their tenants from defacing the buildings with sign-boards and prominent lettering, confining all privileges in this direction within strict limits. Half a century has passed away since the French imposed restrictions. We have a national society dealing with the question, which was formed in 1893, and in the spring of this year the 'Advertisement Regulation Bill' passed its second reading in the House of Lords; but the evil is so widespread that it will be necessary to form an overwhelming public opinion which will perceive the folly of spending money and effort in beautifying our cities and buildings, and mutilating the result with flaming advertisements. Yet another feature will have to be eliminated if we intend to promote the æsthetic treatment of our great thoroughfares—the standards and overhead wires in connection with our tram system. It is to be desired that engineering skill will devise a method to bring this about. Another means of obtaining a clean and cheerful aspect for our streets is the use of cleansable material, such as hard bricks and terra-cotta, and we have two samples in this city, which periodically renew their pristine beauty, and will continue to do so for ages to come by the application of water supplied by a hose-pipe. Unfortunately, terra-cotta lends itself so readily to the repetition of ornament that there is danger of making our designs too elaborate, and the multiplication of ornamental features makes the cleansing process more difficult. Therefore, we should aim at plain wall-surfaces, with high-class decoration sparingly used." After the address was concluded, Mr. Bulmer presented the prizes, which had been awarded as follows:—Measured drawings—Silver medal and President's prize of 5*l.* 5*s.*, Mr. W. Whitehead. Sketching—1st, Mr. W. J. Freeman and Mr. W. Whitehead; 2nd, Mr. J. Greaves. Design—1st, Mr. W. P. Rylatt; 2nd, Mr. W. Whitehead. Essay—Mr. W. P. Rylatt. Construction—Mr. W. P. Rylatt. Halden prize of 4*l.* 4*s.*, Mr. W. Foggett.

ARCHÆOLOGICAL SOCIETIES.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—The first meeting of the session 1905-6 was held on Wednesday, the 15th inst., at 32, Sackville-street, Piccadilly, at 8 p.m., the Treasurer, Mr. R. H. Forster, in the chair. A paper was read by Mr. Emanuel Green upon "The Roman Channel Fleet, with Notes on Clausentum and the Isle of Ictis." After tracing the journey to Britain by sea and

land of the Emperor Claudius, and his return home, where he received a grand ovation as having girdled the earth with a Roman ocean, it was shown that from this time the military movements on land were supported by a watchful protector, the Classis Britannica, guarding the Fretum Britannicum, the narrow sea. This important fleet, which existed for 400 years, has hitherto been entirely overlooked. Many finds and evidences in proof were noticed; thus, with others at Boulogne, there is an inscription in honour of a trierarch, or captain, who was a known contemporary of Claudius, and tiles and bricks have been found there as well as in Britain bearing the letters C. L. B. R. The revolt and success of Carausius were fully commented on, and especially a naval fight off the Isle of Wight, when the victors, the imperial galleys, continued their course to Clausentum, our Southampton. The important position of Clausentum has not received the notice which it should claim as being the western port of the narrow sea, as Richborough was the eastern, and so the guardian against the pirates of the north. Clausentum was a large well-placed depôt from which the voyage to Gaul would be safe and well protected by the fleet. It was, in fact, the chief western port, and may be traced as the place for the shipment of lead from the Mendip mines. Another point not unconnected with this, the supposed large export of tin from Britain, was most minutely noticed, and especially in connexion with the supposed tin islands, the Cassiterides and the Isle of Ictis. The old writers as authorities were fully examined and criticised in chronological order, especially the accounts of Cæsar and Diodorus. The conclusion was that the early statements were written from hearsay, not from personal knowledge, and that there was no such early tin traffic with Britain. The mention of Britain in the story arose from the current belief that its western end was opposite Spain, and so in the ocean just outside or beyond the Cassiterides and the isle of that group called Ictis. One writer was bold enough to assert that Britain was in full view from the Spanish coast. As to Cornwall, tin is not mentioned in the Domesday for that county. No tin was worked there until after that date. The story of a certain block of tin, now in the Truro Museum, said to have been found in Falmouth Harbour, and claimed as belonging to the early export, was sharply criticised, and declared to be one more myth in this mythical story. Mr. Compton, Mr. Gould, the Chairman, and others joined in the discussion which followed.

GLASGOW ARCHÆOLOGICAL SOCIETY.—The annual meeting of Glasgow Archæological Society was held on the 16th inst. in the rooms of the Society, 207, Bath-street, Mr. J. G. Dalrymple presiding. Mr. W. G. Black submitted the annual report, which stated that seventeen members had been added during the past session. The Council had made representations to the Lanarkshire County Council regarding the partial removal of a prehistoric fortification near Abington, and the Council had at once interfered. With reference to representations, in which the Council had assisted, protesting against the scheme for the rebuilding of the Royal Infirmary, the Council regretted to state that the directors were apparently determined to proceed with the erection of the building. The infirmary formed part of the old Archiepiscopal Palace of Glasgow, and was given as a free gift by the Crown to the directors. It was matter for deep regret that the directors should proceed to take such action as would, there was grave reason to apprehend, for all time destroy the appearance of the cathedral, more especially as they were advised that the reconstruction of the building might be so carried out as to avoid any such contingency. The report was adopted. A paper was afterwards read by Sir James Balfour Paul, Lyon King-at-Arms, on the "Matrimonial Adventures of James V."

SCOTTISH ECCLESIOLOGICAL SOCIETY.—At the meeting of the Glasgow district of this Society recently, a paper was read by Mr. John Honeyman, R.S.A., on "The Shrine of St. Columba at Iona," in which the writer described in detail the remaining indications that, at one period—probably in the beginning of the XIIIth century—the choir of the Abbey Church had beneath its east end a crypt with side aisles. Mr. Honeyman was able to bring some of these indications vividly before his audience with the aid of photographic slides. He also exhibited plans and sections of the building as he supposed it had been originally arranged, and referred to examples elsewhere erected about the same time, referring more particularly to the crypt at Amalfi, where the relics of St. Andrew, the patron saint of Scotland, were enshrined in 1208. He thought that enough remained at Iona to show that the general arrangement of the plan at Amalfi, Iona, and the original crypt at Glasgow were similar, and gave reasons for believing that they were intended to serve the same purpose—namely, to cover the grave or preserve the relics of the patron saint in such a position that when the choir was built the high altar might be placed exactly over the consecrated spot below. No doubt Columba had been buried about 600 years before a resting-place had been prepared for his relics, but St. Andrew had been buried more than a thousand years before the cathedral at Amalfi was begun. In those days the bones of saints and martyrs went a very long way—the possession of a skull, a leg or arm bone, if well authenticated, was quite enough to make a shrine famous throughout the world. He did not say that there was evidence to prove that the crypt at Iona had been erected as the shrine of Columba; he only pointed out reasons for believing that it was. Mr. Honeyman went on to mention some of the peculiarities of the only remaining portion of the old structure. A weather-table on the north wall indicated that the side aisle had at one time extended westwards to the transept. He had cut a trench from north to south a few feet west from the present west wall of the aisle, and found, about 2 ft. below the surface on the line of the outer wall of the aisle, the remains of the old aisle wall, and also that the foundation of the north wall of the choir was only about 2 ft. below the surface, proving that the crypt had not extended westwards further than the present aisle. The floor over the crypt appears to have been of wood carried across the aisle on corbels, and on the side next the choir on a level scarcement 6 in. broad, 18 in. below the surface of the floor. The floor of the present choir is 6 ft. 3 in. lower. Mr. Honeyman pointed out that the natural configuration of the ground, sloping as it does to the south-east, made it easy to construct a crypt without much excavation if the choir floor was raised (as it evidently was) only 2 ft. above the floor at the west end of the nave. That the floor level there has never been materially altered is evident from the fact that it is there we find the remains of the oldest chapel and the oldest nave—the chapel in which tradition says Columba was buried, and the nave which was 5 ft. narrower than the existing one.

ENGINEERING SOCIETIES.

THE JUNIOR INSTITUTION OF ENGINEERS.—A visit of this Institution took place on Saturday afternoon, November 18, to Messrs. Barclay, Perkins, & Co.'s Anchor Brewery, Southwark, the number of members attending being about 100. They were shown round by Messrs. T. H. Pickett. W. H. Phillips, and E. Barnett, who pointed out the many features of engineering interest which were to be seen, including the malt store-bins, elevators, various malt-cleaning screens, crushing rolls, coppers, mashing-tuns, under-backs, copper-backs, sparging apparatus, hop-backs, coolers, wort refrigerators, fermenting squares, slate-cleansing backs, yeast backs, fermenting rounds, yeast presses, steam and gas engines for motive power, a new battery of boilers, electric-light installations, cooperage cask-cleansing machinery, and hop stores, maintained at a temperature below freezing point by means of a refrigerating apparatus specially laid down for the purpose. Altogether about three hours were spent in the inspection. The ensuing visit will be to the works of Messrs. Johnson & Phillips, at Charlton, on Saturday morning, December 16.

ARTS AND CRAFTS EXHIBITION SOCIETY.—The triennial exhibition of this Society will in all probability be opened about January 15, 1906, in the Grafton Gallery, instead of in the New Gallery as heretofore. The receiving days will be December 28 and 29.

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Fifty Years Ago.

FROM THE *Builder* OF NOVEMBER 24, 1855.

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On the 3rd and 4th of next month drawings are to be received at the Suffolk-street Galleries, and we take leave to say that every architect in the United Kingdom who sets a proper value upon his art and upon his own *personal* interest will be prepared to contribute, or to satisfy himself that he has good reason not to do so. No one can *afford* to be at all careless in this matter. With the utmost respect for the older members of the profession we urge upon them that they are not exempt from the duty of *maintaining* a position, or the alternative which there is in all professions of being supplanted. To the young we say that the opportunities that an exhibition afford are the most valuable which are open to them. We see no reason why the Architectural Exhibition should not be made to supply all that can be got out of architects' competitions—with their degrading influence upon the profession, their sacrifice of much that is important to the result in art, and their confessed failure as to the attracting men of established repufations which it is of course one of their objects to do. The main excuse for the numerous responses to any sort of offer has been that "competing" was a means of education in the preparation of designs. The question is whether similar advantages, along with others, might not be made to accrue from other sources. We know of several positive instances in which professional employment and *status* have come from the exhibitions that have already taken place—moderately successful as these have been. We may remark that the Architectural Association has already done good service by its class of design, and might, we think, easily give all the advantages as to study, by the occasional choice of subjects of greater importance and magnitude, in connexion with particular sites of ground. Committees will perhaps one day begin to doubt whether their interests are served by the present system of architects' competitions.

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MONUMENT TO PAILLERON, PARIS.—MONS. L.-R. BERNSTAMM, SCULPTOR.

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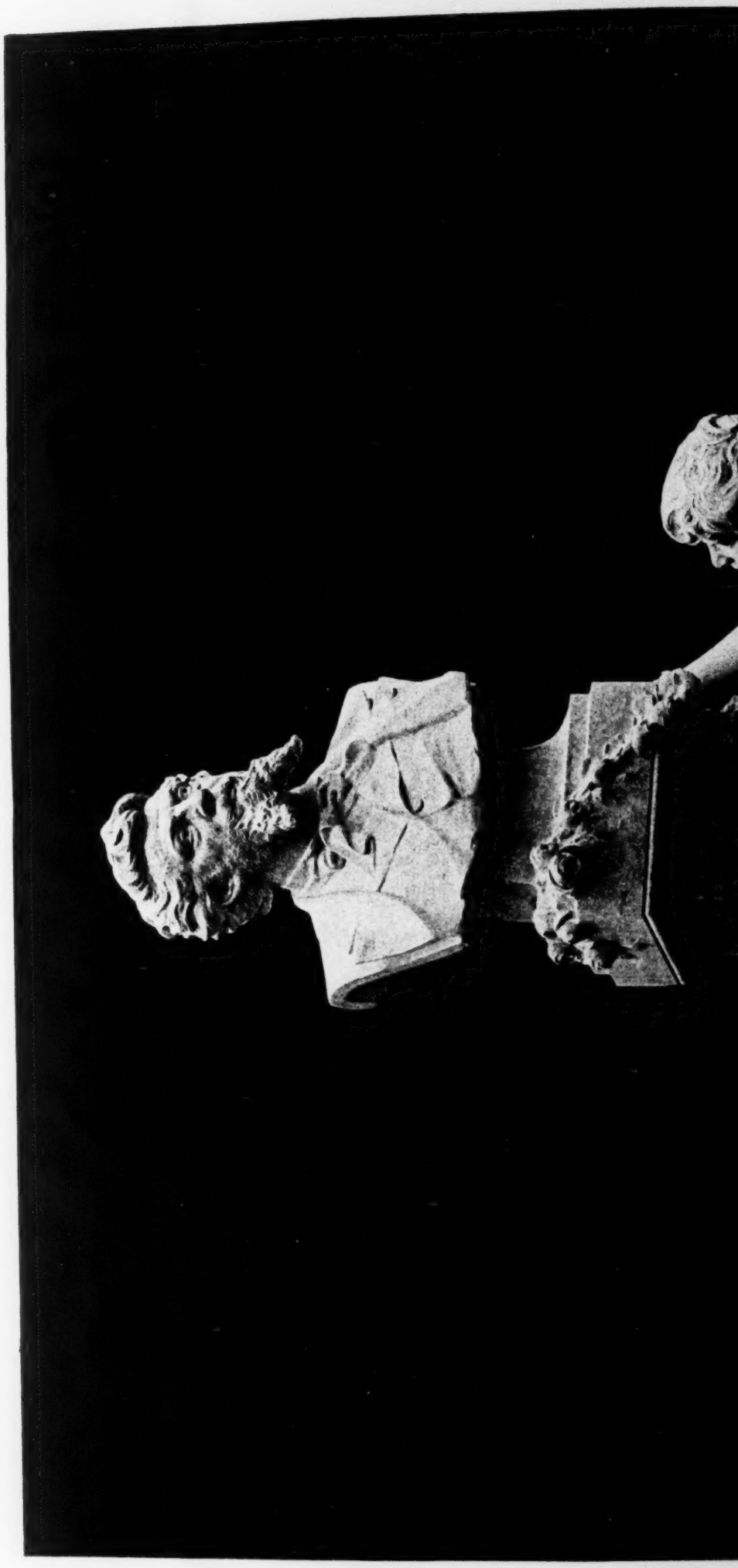


INK PHOTO SPRAGUE & C° LT° 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

MONUMENT TO PAILLERON, PARIS.—Mons. L.-B. Bernstamm, Sculptor.

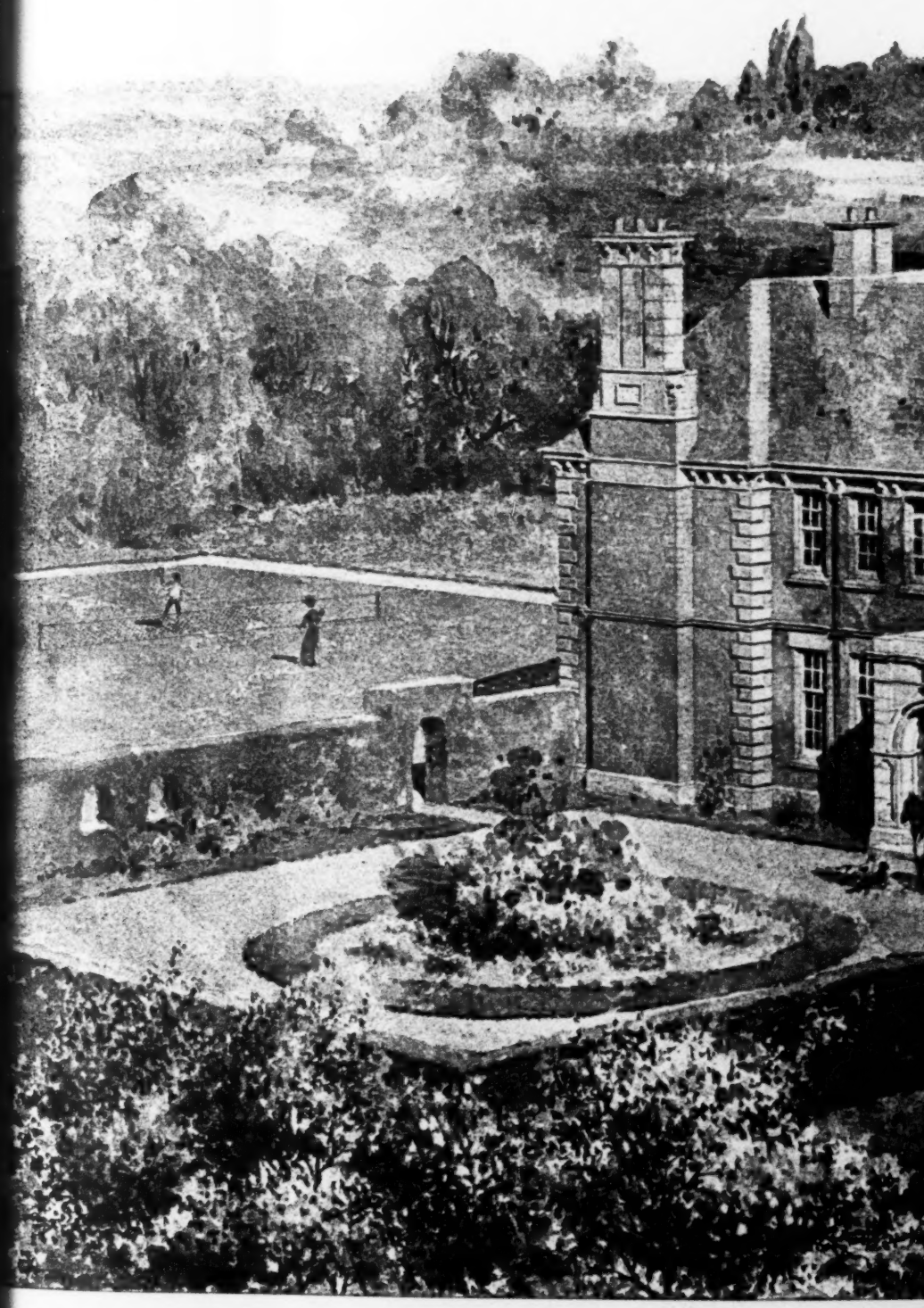
HOUSE AT NEWMARKET

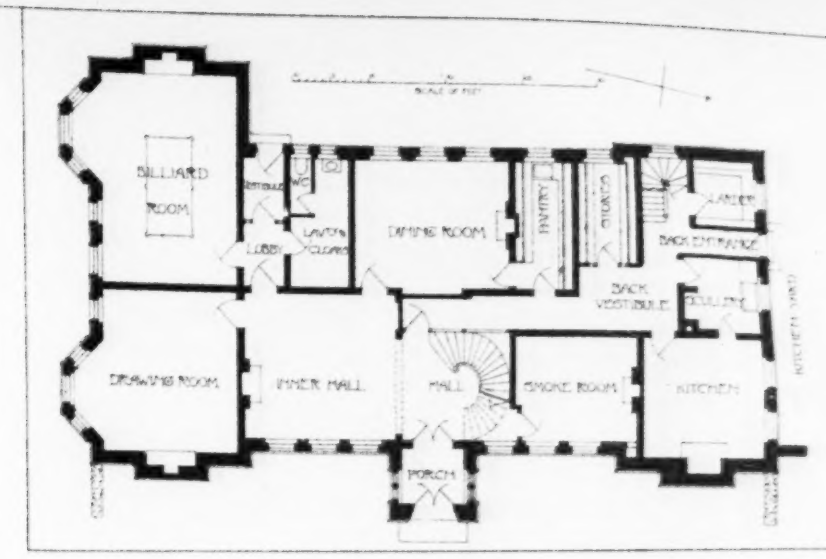
MR. A. N. PRENTICE · F.R.I.B.A.
· ARCHITECT ·

PHOTO LITHO. SPRAGUE & Co LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

HOUSE AT CORBY

NORTHAMPTONSHIRE





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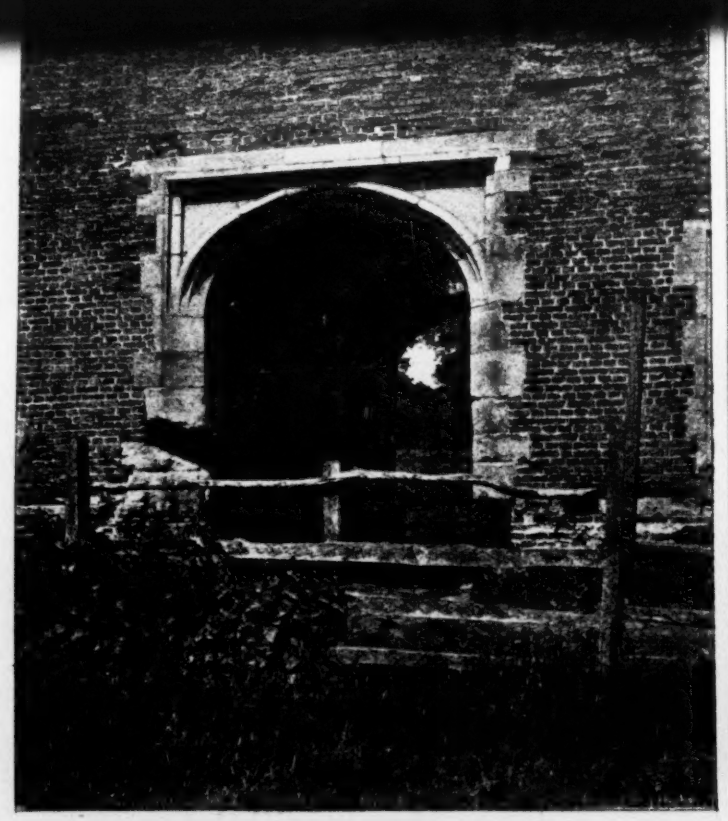

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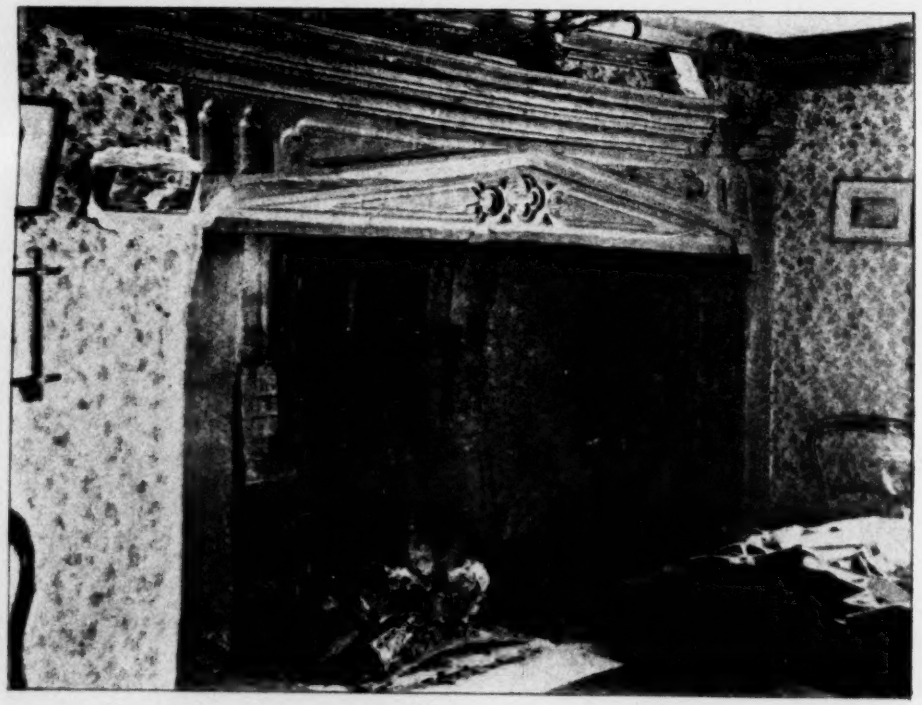

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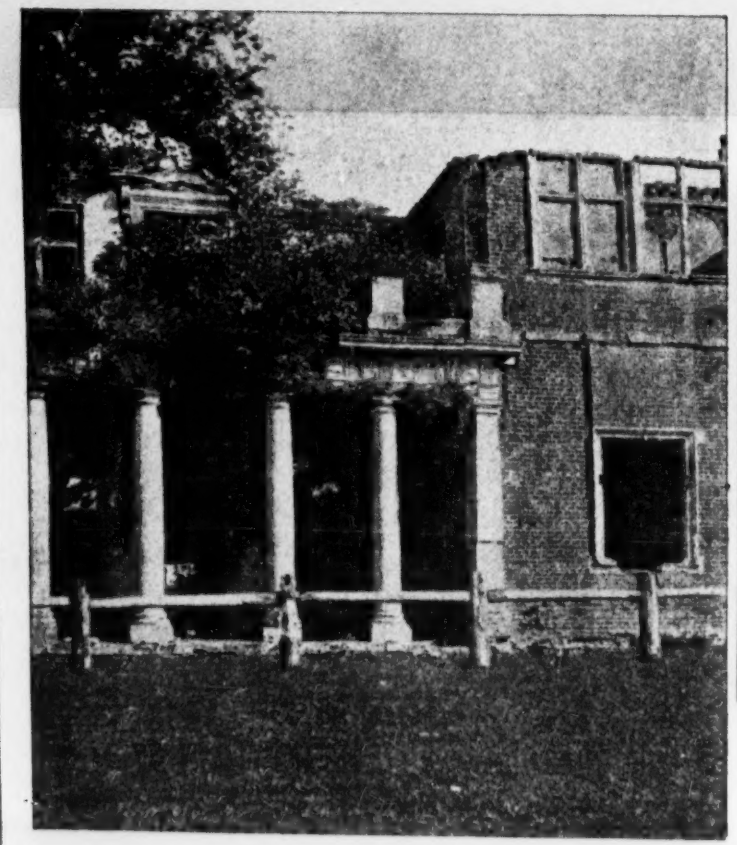

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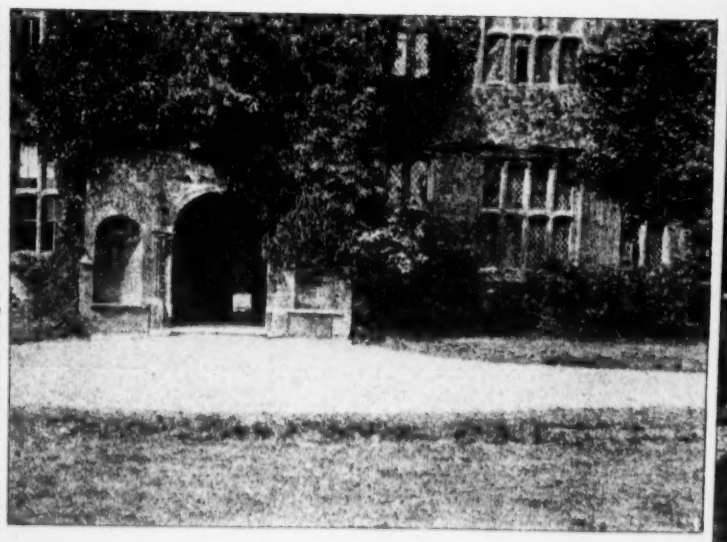

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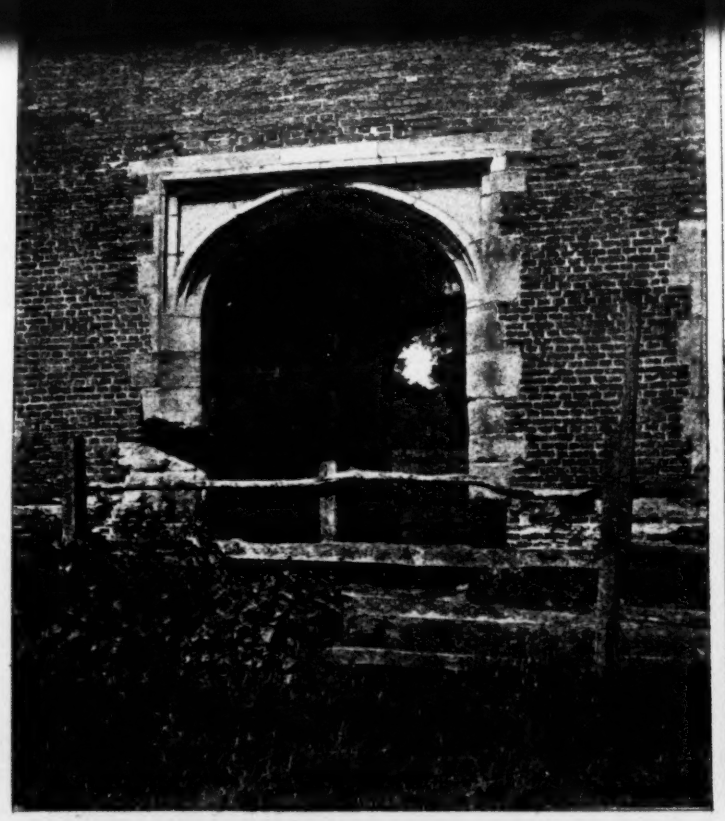

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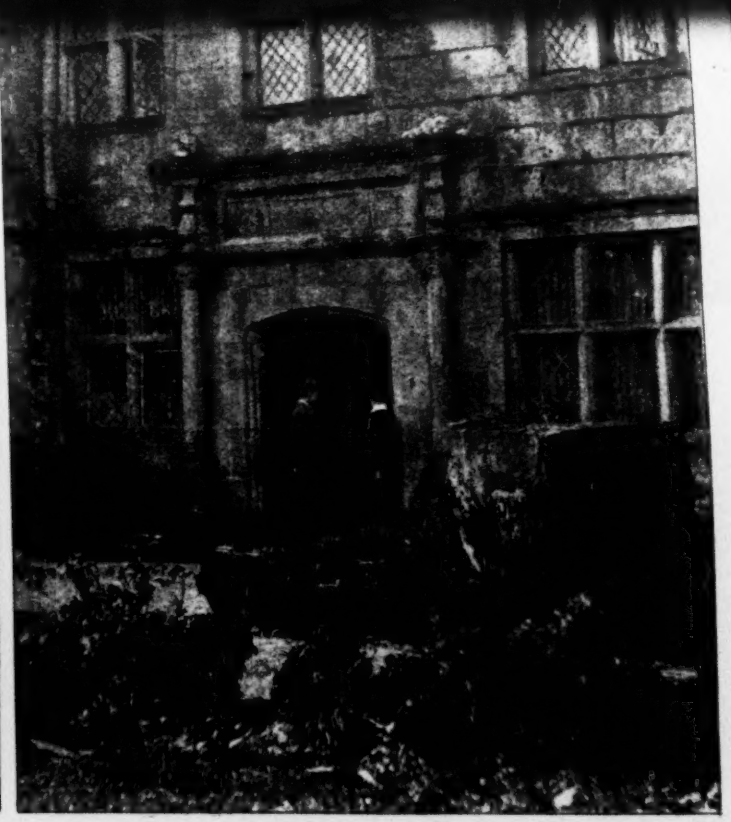

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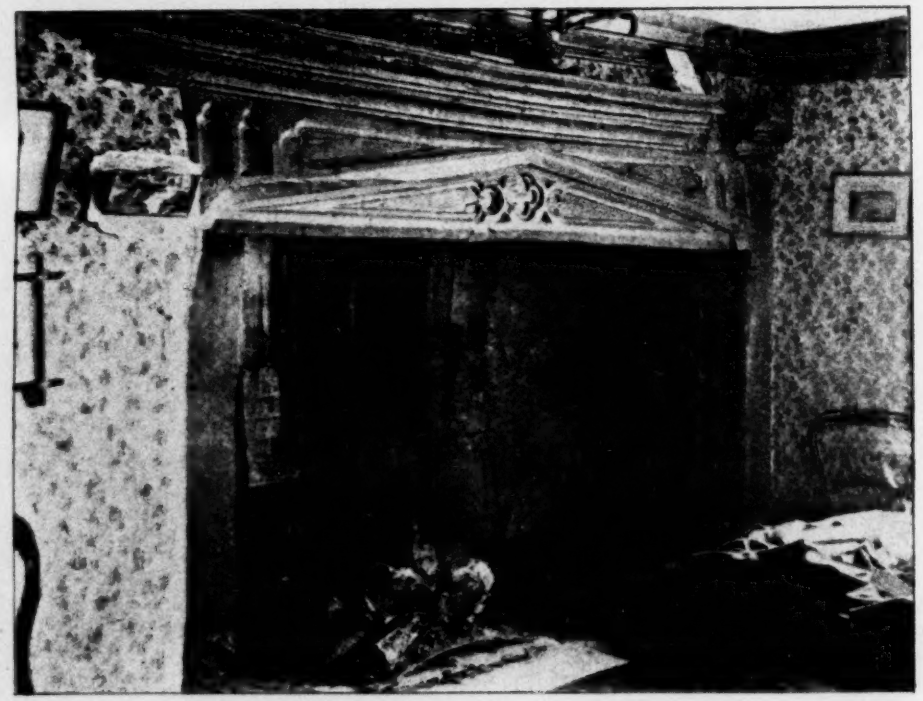

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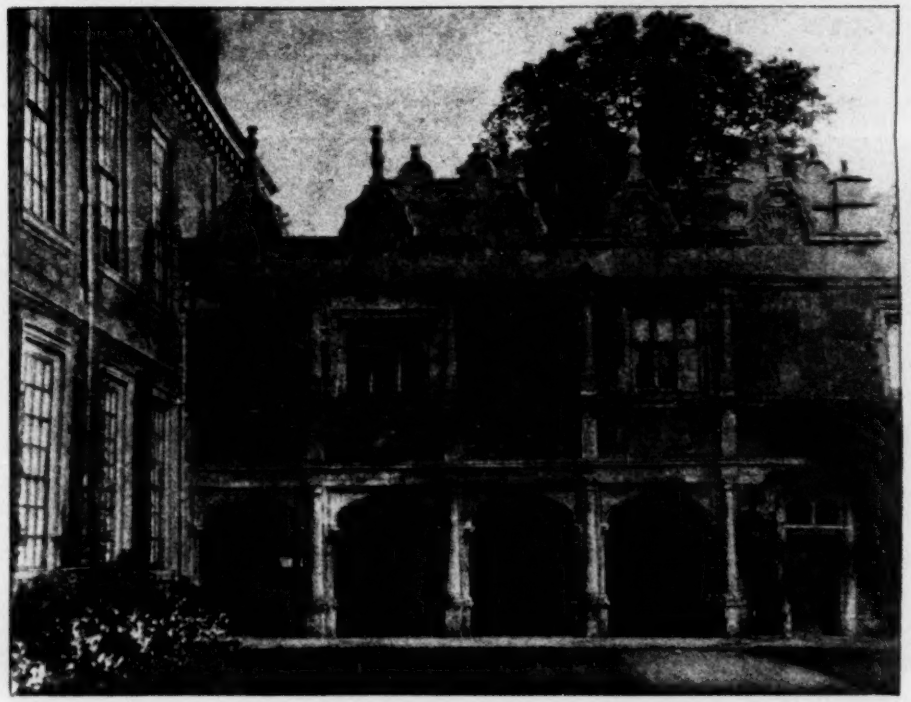

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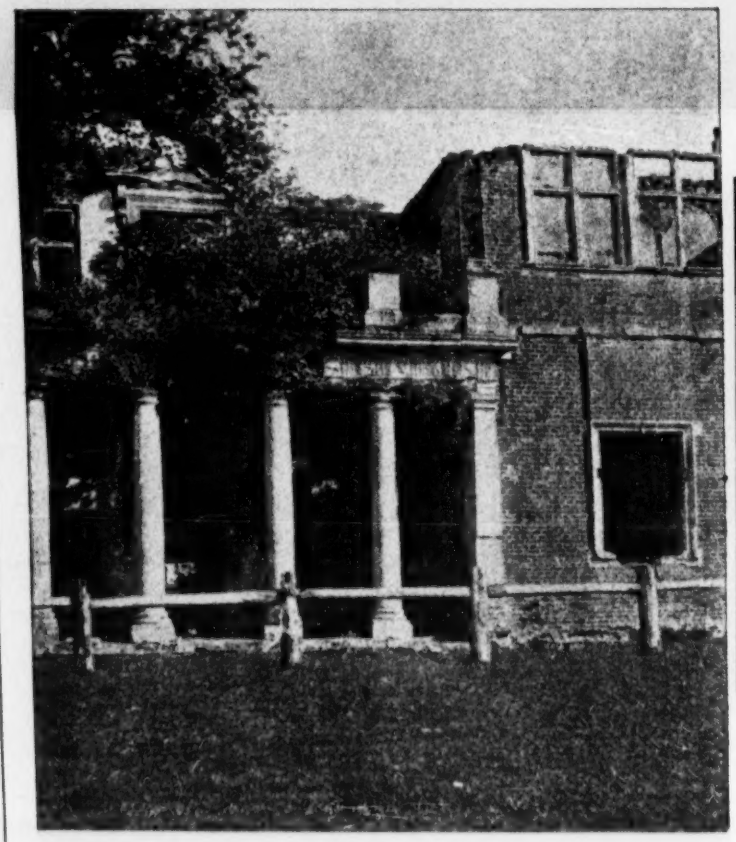

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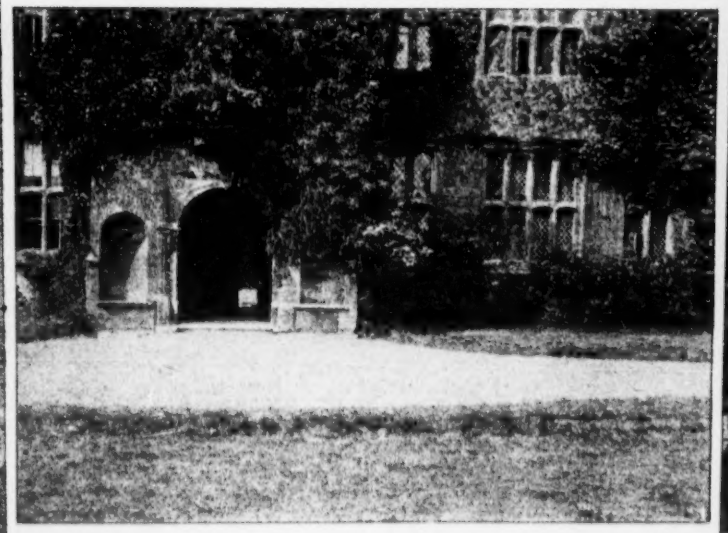

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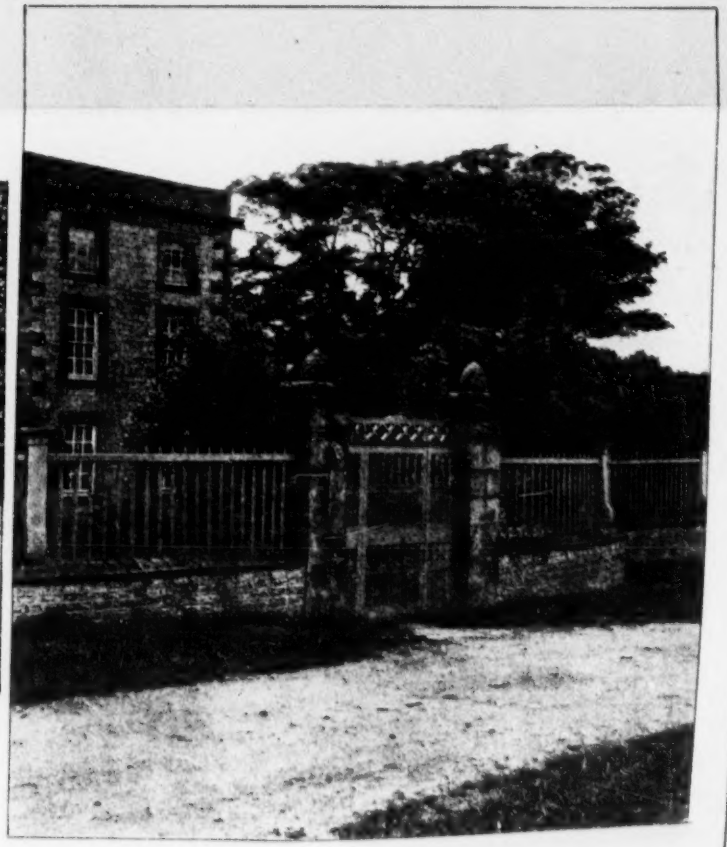

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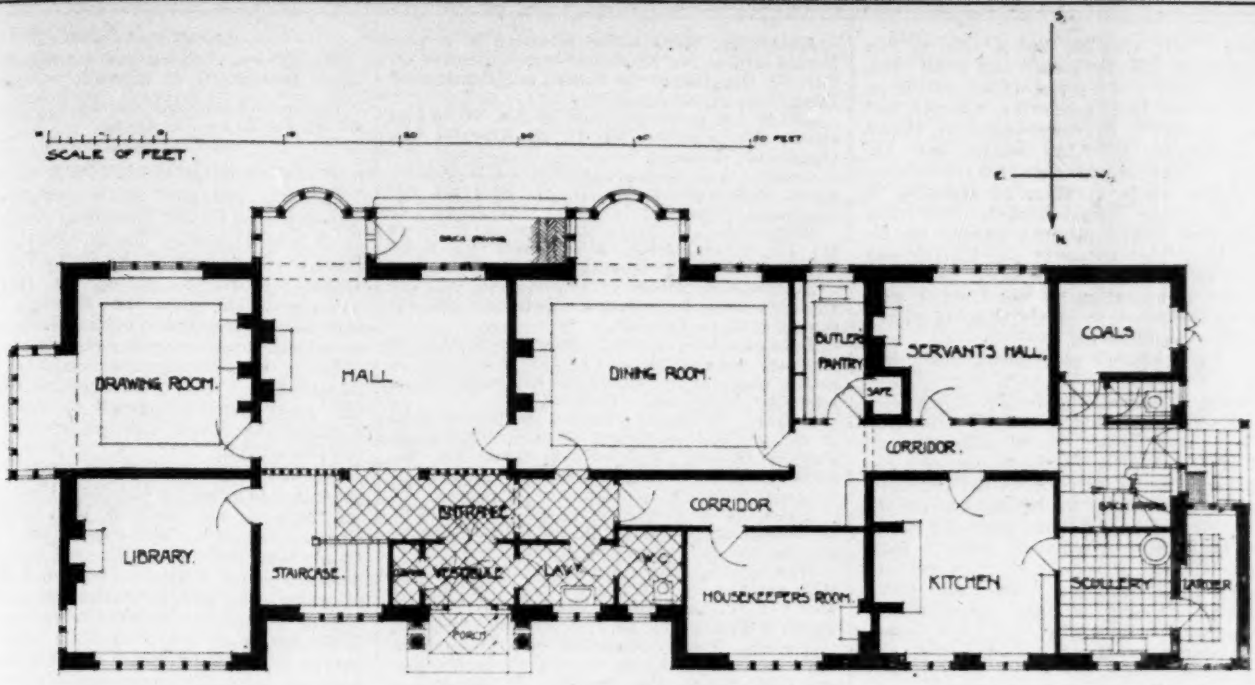

House at Newmarket. Plan.

HOUSE AT NEWMARKET.

THIS house is situated on high ground on the Queensberry Estate, and commands an extensive view of the surrounding country. It is built of local red brick; the sills and heads to the windows and the gables and pediments are of moulded bricks. The three bays are of white Mansfield stone, and the entrance porch, carrying a semi-circular window over, is of wood with lead dressings.

There is a small stable and coachman's cottage in the grounds; and a feature is being made of an old gravel pit which lies to the south of the house by converting it into a sunk garden.

Messrs. Parnell & Son, of Rugby, are the contractors; Messrs. Dent & Hellyer are doing the plumbing work; and Mr. J. H. Verrell is the clerk of works. The drawing illustrated is by the architect, Mr. A. N. Prentice.

HOUSE AT CORBY, NORTHAMPTONSHIRE.

THIS house is built of the local brown sandstone, with Weldon stone dressings and stone slates from Colley Weston.

The entrance-court is laid out much as shown on the drawing. The interior treatment is plain and simple; the hall and vestibule, however, are panelled, and special treatment has been accorded to the staircase, the ceiling and fireplace of the drawing-room, and to the fireplace of the billiard-room. The lighting will be electric, supplied by a private installation.

The drawing was hung in this year's Academy. The architects are Messrs. Gotch & Saunders, of Kettering.

ILLUSTRATIONS OF OLD MANOR HOUSES.

THESE are from photographs lent by Mr. J. A. Gotch, and are given as illustrations to his paper read at the Architectural Association, a report of which will be found on another page.

LIBRARY, SEVENOAKS.—The opening of the new Free Library at Sevenoaks took place recently. The building is externally of red brick, with Bath stone dressings, and green slated roof. Surmounting the main door is a lead-covered dome, with weather vane, the Seven Oaks being cut just beneath the dome. The ground floor contains the lobby of the lending department, and magazine and filing and repairing rooms. The newsroom is also situated in the front, with vestibule hall, and a Stuart's granolithic staircase leading up to the first floor, which contains the reference library and ladies' rooms. The whole of the ground floor is of maple wood blocks. The back portion of the building, which is of one floor only, is covered with lead flats, and lighted by skylights. The heating chamber and storage are in the basement. Mr. E. E. Cronk was the architect.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday, in the County Hall, Spring-gardens, Sir E. A. Cornwall, Chairman, presiding.

Resignation of Sir W. Richmond.—The Clerk read a letter from Sir William Richmond resigning his position as one of the county aldermen.

The seat was accordingly declared vacant.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend Battersea Borough Council 2,218*l.* for street lighting purposes; Camberwell Borough Council 1,495*l.* and 2,410*l.* for housing purposes; Fulham Borough Council 25,000*l.* for electric light installation; and Hackney Borough Council 1,104*l.* for street improvement. Sanction was also given to Stoke Newington Borough Council to borrow 6,175*l.* for electric light installation and meters.

School, Rotherhithe.—The Education Committee brought up a report recommending that expenditure on capital account not exceeding 6,082*l.*, in respect of the erection of a permanent school on the Magdalen-street site, Rotherhithe, be sanctioned. After discussion, the recommendation was agreed to.

Reconstruction of Bridge.—The Bridges Committee recommended that the estimate of 17,000*l.* for the reconstruction of Victory Bridge, carrying Ben Jonson-road over the Regent's Canal, be agreed to.

This recommendation was also carried.

Projecting One-story Shops, Edgware-road.—The Building Act Committee proposed to give consent to the erection of certain one-story shops in Edgware-road, Paddington,* the recommendation being moved by Mr. Taylor, as Capt. Hemphill, the chairman of the Committee, refused to do so.

Capt. Hemphill said it was undesirable to allow these projections in such an important thoroughfare. It would be no advantage to the public.

Mr. Lewin Sharp moved that the recommendation be referred back, remarking that the Committee were not doing their duty to the public in allowing such projections.

Mr. Lewis said the applications showed an ingenious attempt on behalf of the landlords of London to increase their ground rents.

Mr. Waterlow objected to the proposals, as these one-story shops were dangerous from the point of view of fire. It was undesirable to have some shops projecting and others not.

Mr. H. R. Taylor said he hoped that the applications would not be rejected as, if agreed to, 15 ft. would be given up to the public without costing anything. The proposals, if carried out, would make the thoroughfare considerably wider, and the owners only wanted 5 ft. in exchange for the 15 ft. There were already one-story shops in Edgware-road.

Mr. Burns, M.P., said that the Council ought not to grapple with the improvement of such an important road in this niggardly way. The Council, especially in view of the recent Report of the Traffic Commission, should look ahead and remember that in twenty years the traffic of the road would be twice what it is now, and then the street would have to be widened at great cost. The minimum width of important streets in London should be 125 ft., and he regretted that Kingsway and Aldwych were not made that width. The Council ought to widen the street now while the improvement could be carried out at a comparatively small cost.

Sir Melville Beachcroft said that Mr. Burns was beating the air. The offer that was made would enable the street to be widened by 15 ft., giving a total width of 84 ft.

On a show of hands, the amendment was declared carried, and on a division it was carried by fifty-seven against forty-two. The applications were then referred back.

Sites for Fire Stations.—It was agreed to seek authority in the next session of Parliament to enable the Council to acquire compulsorily, and to use as sites for fire stations (i.) a piece of vacant ground on the western side of Wyndcliff-road, at its junction with Charlton-road, and (ii.) the site of "Foxley House," No. 30, Foxley-road, Camberwell New-road.

Site for Car-shed.—It was also agreed to seek authority in the next session of Parliament to acquire compulsorily the site in Pemberton-road and Pemberton-terrace, Holloway, for the erection of car-shed and sub-station in connexion with the electric working of the Council's (northern) tramways.

Norbury Estate, Croydon.—On the recommendation of the Housing of the Working Classes Committee, it was agreed that the estimate of 500*l.*, submitted by the Finance Committee, be approved in respect of preliminary expenses to be incurred in the preparation of plans, etc., in connexion with the development of section B of the Norbury Estate, Croydon.

Improvements.—The estimate of 1,300*l.*, submitted by the Finance Committee in respect of the widening of Peckham Rye was approved.

The estimate of 2,267*l.*, submitted by the Finance Committee, was also agreed to in respect of the Lower Richmond-road improvement.

Proposed Finsbury Park Empire Theatre.—The Theatres and Music Halls Committee reported that they had considered plans, submitted by Messrs. F. Matcham & Co., on behalf of Moss's Empires, Ltd., showing the arrangements proposed to be adopted in the erection of a music-hall, to be known as the

* The applications are printed on another page, under "Applications Under the 1894 Building Act."

Finsbury Park Empire, on a site at the junction of St. Thomas's-road and Prah-road, Finsbury Park, and in respect of which an application has been made for a music and dancing licence. Accommodation is shown for an audience of 2,138 seated, and 535 standing. They stated that they are considering the whole question of standing in places of public entertainment, and they thought that the applicants should be informed that the approval of the present plans is subject to any decision that may be arrived at hereafter by the Council with regard to the question of standing in places of public entertainment.

The Committee's recommendation was agreed to.

Proposed Kilburn Vaudeville Theatre.—They also reported that they had considered plans submitted by Mr. F. W. Hingston, on behalf of Mr. Walter Stephens, showing the arrangements to be adopted in the construction of a music-hall, to be known as the Kilburn Vaudeville Theatre, proposed to be erected at Kilburn High-road, with a frontage on Kilburn Priory, and in respect of which an application has been made for a music and dancing licence. Accommodation is shown for an audience of 1,629 seated, and 284 standing. They recommended, and it was agreed, that the plans be approved on certain conditions.

The Glasgow Fire.—Dr. Cooper, in reply to Mr. Jeffrey, said he was glad to say that the common lodging-houses in London were, as far as possible, safe against such a disaster as had recently occurred at Glasgow. Both the architect and the fire offices continually advised the Housing of the Working Classes Committee on the subject, and he believed at the present moment that, with the exception of five houses, which were under consideration, in every common lodging-house in London there was some alternative means of escape in case of fire, in the majority of cases there being separate staircases.

Port of London.—A long discussion took place on the question of the improvement of the Port of London. The Rivers Committee brought up a long report, and an amendment to refer this back for further discussion was defeated. The hour for adjournment having arrived, the debate was adjourned.

The Council adjourned soon after 7 o'clock.

APPLICATIONS UNDER THE 1894 BUILDING ACT.

THE London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses:—

Erection of Projecting One-story Shops to Nos. 431-451 (odd numbers only), Edgware-road.

Paddington, North.—One-story shops in front of Nos. 435 and 437, Edgware-road, Paddington (Messrs. Gardiner & Theobald for Meux's Brewery Company, Ltd.).—Referred back.

Paddington, North.—One-story shops in front of Nos. 431 and 433, Edgware-road, Paddington (Messrs. Gardiner & Theobald for Messrs. Matthews & Son, Ltd.).—Referred back.

Paddington, North.—One-story shops in front of Nos. 439 to 451 (odd numbers only), Edgware-road, Paddington, to abut also upon Maida-hill West (Messrs. Boehmer & Gibbs for Mr. W. Hirsch).—Referred back.

Erection of Residential Flats on the Site of Nos. 79 to 105 (odd numbers only), Park-road, Regent's Park.

Marylebone, East.—Residential flats, with bay windows, upon the site of Nos. 79 to 105 (odd numbers only) inclusive, Park-road, Regent's Park (Sir Arthur Blomfield & Sons for Mr. H. Johnson).—Consent.

Lines of Frontage and Projections.

Strand.†—Rebuilding of Nos. 133 and 135, Regent-street (Messrs. R. C. Harrison & Son for the London Joint Stock Bank, Ltd.).—Consent.

Hampstead.†—A new shop front with entablature at No. 56, High-road, Kilburn (Mr. G. A. Sexton for Messrs. D. Fearn & Co.).—Consent.

Strand.—A projecting sign and two show-cases at the "Green Shade," Argyll-street, Oxford-street (Mr. W. Lockwood for Mr. A. Weiner).—Consent.

Strand.—Retention of three projecting signs at Nos. 22 and 23, Long-acre (Messrs. Windover, Turrill, & Sons).—Consent.

Holborn.—A projecting sign at No. 252, Tottenham Court-road (Messrs. Wakelin & Co. for Messrs. Wolfe & Hollander, Ltd.).—Consent.

Kensington, North.—The retention of a projecting sign at No. 18, Archer-street, Kensington (Mr. W. Douglas for the British and Continental Drug Company).—Consent.

Strand.—A projecting sign at No. 50, King-street, Regent-street (Mr. R. H. Kerr for Mr. Chapman).—Consent.

Strand.—A projecting sign at No. 4, Foubert's-place, Regent-street (Mr. R. H. Kerr for Mr. Chapman).—Consent.

Westminster.—A projecting sign in front of No. 121, Victoria-street, Westminster (Mr. A. C. Forrester for Mr. F. Hazell).—Consent.

Holborn.—Retention of a projecting sign at No. 26, Gray's Inn-road, Holborn (Messrs. Caspar & Co.).—Consent.

Dulwich.—Retention of projecting porches at Nos. 48, 50, and 58, and to the erection of a similar porch at No. 52, Forest Hill-road, Lewisham (Mr. J. Newton).—Consent.

Fulham.—A building on the northern side of Broughton-road, westward of Stephendale-road, Fulham (Messrs. Badenoch & Bruce for the Directors of the Sunlight Laundry Company).—Consent.

Norwood.—A projecting clock at No. 108, Norwood-road, Norwood (Messrs. Gillett & Johnston for Mr. M. Philcox).—Consent.

Westminster.—The retention of a wood and glass addition upon the bay window in front of No. 124, Victoria-street, Westminster (Messrs. Griffin & Woollard for Mr. J. B. Martin).—Consent.

Hackney, North.—Retention of a building on the western side of Church-path, Stoke Newington (Mr. W. F. May for Mr. J. Gregory).—Consent.

Westminster (detached).—A kiosk at the western end of the Hyde Park Hotel, Knightsbridge (Mr. F. Gregory for Messrs. Newitt & Philipp).—Refused.

Woolwich.—The re-erection of No. 4, George-street, Woolwich (Mr. J. O. Cook for Messrs. J. Frankling & Son).—Refused.

Width of Way.

Wandsworth.—Three houses on a site abutting upon the northern side of Warple-way and western side of Warple-road, Wandsworth, with external walls and forecourt boundary at less than the prescribed distance from the centre of the roadway of Warple-road (Mr. F. Dolley).—Consent.

Southwark, West.—Addition to a block of dwelling-houses to be inhabited by persons of the working-class on the north side of Sumner-street, Southwark, so far as relates to the blocking up of a doorway and the erection of a lean-to shed on the space at rear (Mr. F. Bailey for the City of London Electric Lighting Company, Ltd.).—Consent.

Greenwich.—Buildings on the east side of Georgette-place, King George-street, Greenwich, with external walls and forecourt boundaries at less than the prescribed distance from the centre of the roadway of Georgette-place (Mr. H. Adams).—Refused.

Width of Way and Line of Frontage

Norwood.—Buildings upon the site of Nos. 232, 234, 236, and 238A, Rommany-road, West Norwood (Mr. J. Stevens).—Consent.

Width of Way, Line of Frontage, and Space at Rear.

Kennington.—A workshop building on the northern side of Richmond-terrace, Clapham-road, Kennington, westward of No. 90, Clapham-road (Messrs. J. A. J. Woodward & Son for Mr. C. Blatchford).—Consent.

Line of Frontage and Construction.

Kensington, South.—The retention of a wood and iron structure of a temporary character erected on the forecourt of No. 48, Victoria-road, Kensington (Mr. W. K. Peirson for Mr. A. J. de Beaufort).—Consent.

Space at Rear.

Lewisham.—A deviation from the plan approved with regard to an irregular open space at the rear of Nos. 3 and 5, Salehurst-road, Crofton Park, so far as relates to the erection of a conservatory at the rear of No. 3, Salehurst-road (Mr. H. M. Dobinson).—Consent.

Strand.—Alterations at No. 7, Noel-street, Soho (Mr. G. C. Lambert).—Consent.

Formation of Streets.

Wandsworth.—A deviation from the plans approved for the formation of new streets on the Durnsford Park estate, Merton-road, Wandsworth, and in connexion therewith the widening of a portion of Merton-road, so far as relates to an alteration in the position of a portion of the street known as Ravensbury-road (Mr. R. C. Gordon for Mr. A. Wise).—Consent.

Whitechapel.—A deviation from the plans sanctioned for the formation or laying-out of new streets for foot traffic only, upon a site on the south side of Fashion-street, Commercial-street, Whitechapel, so far as relates to an alteration in the position and width of the outlet of the new street leading to Brick-lane and the erection of additional shops next such outlet (Mr. A. Davis).—Consent.

Alteration of Building.

Wandsworth.—Alterations to No. 28, High-street, Putney (Mr. H. Bignold).—Consent.

The recommendations marked † are contrary to the views of the local authority.

COMPETITIONS.

CENTRAL LIBRARY FOR ST. PANCRAS.—On Monday the Public Libraries Committee of St. Pancras reported having received a letter from the President of the Royal Institute of British Architects stating, in reply to a communication from the Borough Council, that he was prepared to nominate six architects to submit competitive designs for the Central Library, to draw up the conditions for the competition. The Committee has (subject to the usual sanction) agreed to this, and the Finance Committee has passed an estimate for the amount.

CHURCH, EPSOM.—A meeting of the general committee of the New Church Building Scheme was held at the Public Hall, Epsom, recently. The vicar (the Rev. W. Bainbridge Bell) presided, and reported the decision of Mr. Fellowes Prynne, F.R.I.B.A., respecting the architects' designs. The successful architects, Messrs. Nicholson & Collette, had been asked if they could design part of the building first of all, to accommodate between 650 to 700 persons. They had replied in the affirmative. The inclusive cost of erection would be about 10,000*l.*, accommodation being thus provided for 650 persons, or with the vestries, if built, 714. The vicar explained that the suggestion was that the vestries and a portion of the west end of the church should be omitted for a time.

LUTON SECONDARY SCHOOL AND TECHNICAL INSTITUTION.—The following architects have been selected to compete:—Messrs. Russell & Cooper (London); Messrs. Mallows & Grocock (Bedford); Messrs. Gotch & Saunders (Kettering); Messrs. Greenway & Newbury (London); Messrs. Spalding & Spalding (London); Mr. Hessel Tiltman (London); Messrs. Brown & Sons (Luton); Messrs. Milne & Milne (Bedford); Mr. M. Zimmermann (London); Messrs. Deacon & Hind (Liverpool).

BOOKS RECEIVED.

THE APPRECIATION OF PICTURES. By Russell Sturgis, A.M., Ph.D. (B. T. Batsford. 7s. 6d.)

BOOK-KEEPING AND ACCOUNTS. By G. Johnson, F.S.S. (Effingham Wilson. 7s. 6d.)

A HAND-BOOK OF COMMERICAL LAW. By Frederick G. Neave, LL.D., Solicitor. (Effingham Wilson. 3s. 6d.)

THE ENCYCLOPÆDIA OF PRACTICAL ENGINEERING. Edited by Joseph Horner, A.M.I.Mech.E. Vols. I. and II. (Virtue & Co. 7s. 6d. each volume.)

THE LAW OF REPAIRS AND IMPROVEMENTS. By T. H. Jackson, M.A. (Butterworth & Co.)

IDEALS IN ART. By Walter Crane. (Geo. Bell & Sons.)

A HISTORY OF WESTMORELAND. By Richard S. Ferguson, F.S.A. Cheap Edition. (Elliot Stock.)

THIRTY-FOURTH ANNUAL REPORT OF THE LOCAL GOVERNMENT BOARD: 1904-1905. (Hyman & Sons. 4s. 10d.)

Correspondence.

THE WATER SUPPLY OF LONDON.

SIR,—Referring to the valuable editorial comments on the letter you very kindly published in your instructive journal of 11th inst., may I venture to point out that as recently as October 28 it was reported in the *Surrey Comet* that a representative of that paper had rowed out into the middle of the river, accompanied by two gentlemen, and "the surface of the Thames for a considerable width between the Ferry and the Riverdale Works was covered with a thin greasy film, similar to that which has given rise to the complaints in the past." But there is a much more serious contamination in the animal and vegetable matter, in suspension and solution, which cannot be got rid of by constructing new reservoirs and filters, as proposed by the Metropolitan Water Board. In the pamphlet by Dr. W. Scott Tebb, referred to in my last letter, the evidence of Dr. Ashby before the Royal Commission on the Metropolitan Water Supply of 1903 is cited. Dr. Ashby found (1) many farmsteads drained into the stream, presenting

innumerable opportunites for pollution by cattle, and washing from manured land, etc.; (2) parts adjacent to canals, communicating with the river, were often manured with house and other foul refuse from London—"I have seen," Dr. Ashby said, "large deposits of such refuse fouling the streams"; (3) decomposing animals; (4) filthy bilge water from barges carrying offensive cargoes; (5) pollution from floating population of canal boats, house-boats, etc.; (6) pollution from laundries, tanneries, fellmongers' yards, breweries, and paper-mills; (7) direct sewage and slop pollution from towns and villages; (8) effluents from sewage works. With reference to the purification of sewage, so-called, Dr. Ashby expressed the opinion that to assume there was no pollution because the sewage of a place was cut off from the rivers, and treated by some chemical process, was quite a mistake. And he instanced the fact that the sewage of Oxford, Uxbridge, and Watford is so treated, yet Dr. Ashby "found much pollution by excessively foul effluents from these places." "Having regard to all the facts," said Dr. Ashby, "and bearing in mind the various chances of pollution which cannot be avoided, however carefully the sewage of inhabited places may be excluded, I cannot but regard the River Thames as an undesirable and unsafe source for the water supply of London." It is a significant fact that all the leading medical journals condemn the present water supply of London.

JAS. R. WILLIAMSON.

TRADE CATALOGUES.

THE Sun Gas Company, Ltd., have sent us a pamphlet describing their apparatus for the dry generation of acetylene. This Company have acquired the patents of Mr. G. J. Atkins, who devised the method of using a solid substance containing combined water, instead of liquid water, for the generation of acetylene from calcium carbide. Contact between the carbide and the solid substance containing combined water (*e.g.*, washing soda) causes chemical reaction to take place, and acetylene is generated. The apparatus consists of an iron cylindrical drum having two compartments, one of which contains the calcium carbide, and the other the dry decomposing material. The drum is revolved by hand, and a measured amount of carbide is thereby automatically fed into the decomposing material. The acetylene resulting from the contact passes into a gasholder.

The Goheen Manufacturing Company, of Canton, Ohio, U.S.A., and London, send us a copy of "Zevy's Architects' Contract Book," consisting of ten detachable sheets, measuring about 23 in. by 18 in., bound in a limp cover. If similar sheets are used in the United States the architects of that country must be exceptionally business-like people. In the right-hand top corner there is a form for the contract between the architect and client, and in the opposite corner another form in which the architect is supposed to book the order with a distinguishing number. The lower part of the sheet is tabulated for entering the names of firms tendering, the prices of the building and engineering work under some eighteen headings, records as to the signing of the contract, and particulars as to the method of payment. The back of the contract-sheet is not prepared for docketing, as one would expect in the case of so precise a document, but bears paint specifications "for the complete preservation of steel railroad and highway bridges and of metal structural work of all kinds from rust and corrosion," the paints to be those of the Goheen Manufacturing Company, and applied under the direction of that firm, whose announcements appear in the form of advertisement pages. Three general types of protective material are made by the company—"Oxidised Carbon Cement" for the preservation of steelwork, "Galvanum" for the permanent protection of galvanised iron, and "Old Honesty Paint," a preparation of pure linseed oil and lead, for general use. No details are given as to these products, but from the photographic views of important buildings and engineering works where they have been used it is clear that the preparations in question have received the approval of leading architects, engineers, and business firms in Great Britain, as well as in the United States.

BUSINESS PREMISES, EDINBURGH.—Two blocks of buildings, consisting of 26 to 30, Princes-street, and the west side of St. Andrew-street, from Princes-street to the lane, are in course of reconstruction. The work is being carried out under the supervision of Mr. J. J. Burnet, of Glasgow.

The Student's Column.

STEAM BOILERS AND PIPES.—XXI.

THE FLOW OF STEAM.

NO system of pipes for the conveyance of steam can be designed in a really satisfactory and economical manner unless the laws governing the flow of steam are properly complied with.

We have known plenty of cases where the sizes of the pipes have been determined by a mental process that can only be designated as guesswork, and that does not deserve even the dubious praise of being characterised as a "rule-of-thumb" method.

In the present article we propose to state some simple rules for calculating the discharge of steam through orifices and pipes, and, as a necessary preliminary, we give in Table XXV. some of the most frequently required properties of saturated steam.

In applying the figures given in this table to readings taken from a steam gauge, 14·706 lb. must be added to such readings, because the gauge registers about 14·706 lb. (approximately 15 lb.) less than the absolute pressure above a vacuum.

The theoretical velocity of efflux from a steam boiler or other reservoir containing steam at a pressure higher than that of the atmosphere is governed by the law of gravity which governs the velocity of air entering the furnace of a boiler. The velocity of flow of steam in pipes is governed by the same law, which we have seen also governs the velocity of flow of the hot gases in boiler flues and chimneys.

TABLE XXV.—PROPERTIES OF SATURATED STEAM.

Absolute Pressure per sq. in.	Temperature.	Latent Heat per lb.	Total Heat per lb. from Water at 0 deg. F.	Weight per cu. ft.	Volume per lb.
lb.	Deg. F.	B.Th.U.	B.Th.U.	lb.	cu. ft.
1	102·1	1042·9	1144·5	0·0030	330·36
2	126·3	1025·8	1151·7	0·0058	172·08
3	141·6	1015·0	1156·6	0·0085	117·52
4	153·1	1006·8	1160·1	0·0112	89·62
5	162·3	1000·3	1162·9	0·0138	72·66
6	170·2	994·7	1165·3	0·0163	61·21
7	176·9	990·0	1167·3	0·0189	52·94
8	182·9	985·7	1169·2	0·0214	46·69
9	188·3	981·9	1170·8	0·0239	41·79
10	193·3	978·4	1172·3	0·0264	37·84
11	197·8	975·2	1173·7	0·0289	34·63
12	202·0	972·2	1175·0	0·0314	31·88
13	205·9	969·4	1176·2	0·0338	29·57
14	209·6	966·8	1177·3	0·0362	27·61
14·706	212·0	965·2	1178·1	0·0380	26·36
15	213·1	964·3	1178·4	0·0387	25·85
16	216·3	962·1	1179·4	0·0411	24·32
17	219·6	959·8	1180·3	0·0435	22·96
18	222·4	957·7	1181·2	0·0459	21·78
19	225·3	955·7	1182·1	0·0483	20·70
20	228·0	952·8	1182·9	0·0507	19·72
21	230·6	951·3	1183·7	0·0531	18·84
22	233·1	949·9	1184·5	0·0555	18·03
23	235·5	948·5	1185·2	0·0580	17·26
24	237·8	946·9	1185·9	0·0601	16·64
25	240·1	945·3	1186·6	0·0625	15·99
26	242·3	943·7	1187·3	0·0650	15·38
27	244·4	942·2	1187·8	0·0673	14·86
28	246·4	940·8	1188·4	0·0696	14·37
29	248·4	939·4	1189·1	0·0719	13·90
30	250·4	937·9	1189·8	0·0743	13·46
35	259·3	931·6	1192·5	0·0858	11·65
40	267·3	926·0	1194·9	0·0974	10·27
45	274·4	920·9	1197·1	0·1089	9·18
50	281·0	916·3	1199·1	0·1202	8·31
55	287·1	912·0	1201·0	0·1314	7·61
60	292·7	908·0	1202·7	0·1425	7·01
65	298·0	904·2	1204·3	0·1538	6·49
70	302·9	900·8	1205·8	0·1648	6·07
75	307·5	897·5	1207·2	0·1759	5·68
80	312·0	894·3	1208·5	0·1869	5·35
85	316·1	891·4	1209·9	0·1980	5·05
90	320·2	888·5	1211·1	0·2089	4·79
95	324·1	885·8	1212·3	0·2198	4·55
100	327·9	883·1	1213·4	0·2307	4·33
110	334·6	878·3	1215·5	0·2521	3·97
120	341·1	873·7	1217·4	0·2738	3·65
130	347·2	869·4	1219·3	0·2955	3·38
140	352·9	865·4	1221·0	0·3162	3·16
150	358·3	861·5	1222·7	0·3377	2·96
175	370·8	852·9	1226·4	0·3899	2·56
200	381·7	845·0	1229·8	0·4431	2·26

The law in question is expressed by the fundamental equation, formula (13), given in Article XIII., p. 345:—

$$v = \sqrt{2gh}$$

As explained in that article this formula indicates merely the theoretical velocity, and does not take into account friction and other causes of loss. It should be noticed further that the flow of steam through orifices and pipes is affected by conditions that do not obtain in the case of liquids and perfect gases, and that rules applying with approximate accuracy to the flow of water and air give results that are somewhat too low when applied to the flow of steam.

The Flow of Steam Through Orifices.—Apart from frictional or other losses, steam flowing into the air from an outlet on a boiler, or other reservoir in which pressure is maintained, has the same velocity as that of a body falling by gravity from the height of an imaginary unbalanced column of steam having a uniform density equal to that at the outlet on the boiler or reservoir.

To determine the height of the unbalanced column, which is the head (h) in the formula (13); we must take into account the difference of pressure on each side of the outlet, and the density of the steam inside the reservoir. As the pressure is always stated in pounds per square inch, and the density in pounds per cubic foot, the pressure must be converted to pounds per square foot.

Then for h we have

$$h = \frac{(p_1 - p_2)\,144}{D}$$

where p_1 = pressure in pounds per square inch inside the reservoir, and p_2 = pressure outside the reservoir, and D = weight per cubic foot of steam at the initial pressure.

Example (25).—Find the velocity of steam discharging to the atmosphere, say 15 lb. per square inch, through the safety valve of a boiler in which the absolute pressure of 35 lb. per square inch is maintained.

Substituting $\left[\frac{(p_1 - p_2)\,144}{D}\right]$ for h, formula (13) reads

$$v = 2g\sqrt{\left[\frac{(p_1 - p_2\,144}{D}\right]}$$

By Table XXV. D = 0·0858; while p_1 = 35 lb., and p_2 = 15 lb. Inserting these values, we get

$$v = \sqrt{64{\cdot}4\left(\frac{20 \times 144}{0{\cdot}0858}\right)}$$

$$= \sqrt{64{\cdot}4 \times 33{,}566} = 1{,}470 \text{ ft. per sec.}$$

This result is the theoretical velocity of the expanded steam.

It must be remembered, however, that the coefficient of contraction (see Article XIV., p. 370) reduces the flow to an amount between 56 per cent. and 93 per cent. of the calculated value, according to the form of the outlet.

Experiments by Napier and others prove that when steam at any pressure flows from a reservoir through an outlet into a space where any other pressure prevails, less than 58 per cent. of the pressure in the reservoir containing the steam, the flow has the practically constant velocity of about 885 ft. per second at the initial density.

According to the experiments of Mr. Brownlee,* the velocity of discharge of steam, in terms of the initial density, from a boiler or other reservoir is given by the formula

$$v_1 = 3{\cdot}6\sqrt{h} \quad \ldots\ldots \quad (47)$$

where v_1 = velocity, as at initial density, in feet per second, and h = height in feet of a column of steam of uniform density at the given initial absolute pressure, the weight of the column being equal to the pressure on a unit area of the base.

It should be noted that this formula does not apply to pressures below 26 lb. per square inch when steam is discharged into the ordinary atmospheric pressure of 14·706 lb. (say, 15 lb.) per square inch.

In flowing through an outlet of suitable form the steam expands to the pressure outside the reservoir, and, as for outside pressures less than 58 per cent. of the inside pressure the ratio of expansion is 1·624, the velocity of the expanded steam is readily obtained.

Table XXVI. has been calculated by formula (47), and the following example will make clear the manner in which the rule is employed.

Example (26).—Find the velocity at which steam issues from an outlet on a steam boiler into the atmosphere; pressure of steam = 26 lb. per square inch above vacuum, pressure of atmosphere = 14·706 lb. per square inch.

The required height (h) of the column of

* *Transactions* of the Institution of Engineers and Shipbuilders in Scotland, Vol. XVIII.

steam is equal to the pressure per square foot divided by the weight per cubic foot of the steam at the given pressure. From Table XXV. we find the weight of steam at 26 lb. per square inch to be 0·065 lb. per cubic foot.

Hence for the height of the column we have

$$h = \frac{26 \times 144}{0{\cdot}065}$$

and the velocity of efflux v_1 initial density.

$$v_1 = 3{\cdot}6\sqrt{\frac{26 \times 144}{0{\cdot}065}}$$

$$= 3{\cdot}6\sqrt{57{,}600} = 864 \text{ ft. per second.}$$

As the ratio of expansion is 1·624, the velocity v_2 of the expanded steam is $v_2 \times 1{\cdot}624 = (864 \times 1{\cdot}624) = 1{,}403$ ft. per second.

TABLE XXVI.—VELOCITY OF DISCHARGE OF STEAM AT DIFFERENT PRESSURES INTO THE ATMOSPHERIC PRESSURE OF 14·706 LB. PER SQUARE INCH.

Pressure above Vacuum lb. per sq. in.	Velocity of Discharge.	
	v_1 At Initial Density.	v_2 Steam Expanded ($v_1 \times 1{\cdot}624$).
	ft. per second.	ft. per second.
26	864	1,403
30	868	1,409
40	875	1,421
45	878	1,426
50	881	1,431
60	886	1,439
70	890	1,445
75	892	1,449
90	896	1,455
100	899	1,460

Although the velocity of steam discharged under the conditions considered above is practically constant, the weight obviously varies with the area (A) of the outlet and the density (D) of the steam in pounds per cubic foot.

For ordinary use it is convenient to have a formula directly giving the weight of steam discharged in a given unit of time, thus saving the separate calculation of the weight from the velocity.

To find the weight (W) discharged per second from the velocity the procedure is represented thus :—

$$W = v_1 \times A \times D$$

where v_1 = the velocity as at constant density, A = the area of the outlet, and D = weight per cubic foot of the steam at the given pressure.

Example (27).—For steam at 70 lb. per square inch, the velocity by Table XXVI. is 890 ft. per second, the value of (D) from Table XXV. is 0·1648 lb., and if we take the internal area of the outlet at 1 sq. in., = $\frac{1}{144}$ sq. ft., the weight discharged per second is

$$W = \left(890 \times \frac{1}{144}\right) \times 0{\cdot}1648$$

$$= 6{\cdot}18 \times 0{\cdot}1648$$

$$= 1{\cdot}018 \text{ lb. per second.}$$

Similarly the discharge per minute is

$$W = \left(890 \times \frac{1}{144} \times 60\right) \times 0{\cdot}1648$$

$$= 370{\cdot}8 \times 0{\cdot}1648$$

$$= 61{\cdot}107 \text{ lb. per second.}$$

From example (27) it is clear that, with the velocity of outflow at slightly less than 890 ft. per second, the discharges can be approximately expressed by the following simple rules :—

Weight of steam per second

$$W = 6{\cdot}16\ A \times D \quad \ldots \quad (48)$$

Weight of steam per minute

$$W = 370\ A \times D \quad \ldots \quad (49)$$

By taking the constant velocity at 874 ft. per second, we get further simplifications of the formulæ giving results that err slightly on the safe side. Thus :—

Weight of steam per second

$$W = 6\ A \times D \quad \ldots \quad (50)$$

Weight of steam per minute

$$W = 360\ A \times D \quad \ldots \quad (51)$$

The experimental results of Napier and Brownlee show that the weight of steam flowing from an outlet into a space where the pressure is not more than 58 per cent. of the initial steam pressure is represented by the equation

$$W = P\ A \quad \ldots \quad (52)$$

where W = weight discharged in pounds per seventy seconds, and P = initial absolute pressure of the steam, and A = area of the outlet in square inches.

This is another easy rule to remember, although somewhat inconvenient, owing to the irregular unit of time necessary.

Rankine states the same rule, including a fraction as a factor to reduce the period of time to one minute, as follows :—

$$W = \frac{6\ P\ A}{7} \quad \ldots \quad (53)$$

Although formulæ (48) to (53) are based upon the results of experiments in which an outlet was necessarily employed, the calculated weights should be qualified by one or other of the values of the co-efficient of contraction stated on p. 370, so as to allow for the effect of the lower efficiency of the outlets employed in practical as compared with experimental work.

In a general way the values of the co-efficient of contraction may be taken at 0·63 for a thin orifice in a plate, and 0·93 for a short cylindrical mouthpiece.

For use with formulæ (50) and (51) it will be sufficient to put the values at 0·65 and 0·95, as the factors 6 and 360 in these rules have already been reduced slightly below the corresponding factors in formulæ (48) and (49).

With the object of enabling the reader to compare at a glance the results given by formulæ (48) to (53) we append the calculated weights of steam discharged into the atmosphere from an outlet of 1 sq. in. area. The initial pressure of the steam is taken at 70 lb. per square inch absolute :—

Formula No.	Weight of Steam Discharged.	
(48)	1·015 lb. per sec.	—
(49)	—	60·97 lb. per minute
(50)	0·988 lb. per sec.	—
(51)	—	59·33 lb. per minute
(52)	—	70·00 ,, per 70 secs.
(53)	—	60·00 ,, per minute

WESTMINSTER CITY COUNCIL.

THE usual fortnightly meeting of this Council was held on Thursday last week at the City Hall, Charing Cross-road, S.W.

Repair of Trenches by the Council.—The Law and Parliamentary Committee presented a report dealing with the decision given recently at the Clerkenwell Police-court in the litigation commenced by the Council against the New River Company (now taken over by the Water Board) in respect of the amount paid by the Council for the supervision of the reinstatement of trenches in the streets. The matter had already been before the High Court, when the Lord Chief Justice gave a decision that the Council were entitled to their claim, and had been referred back, on a further appeal by the company, to the Police magistrate. The magistrate having decided that the Council had not incurred any substantial extra expense, the Committee reported that the matter would go back to the Court of Appeal.

Spiked Trestle Rods as Barriers in Roadways.—At the last meeting of the Council a resolution was agreed to that the Council should make a charge for the reinstatement of 18 in. sq. of paving in all cases where spiked trestle rods were used by statutory undertakers as barriers for street works. The Works Committee reported that they had been advised that the Council could charge only for the actual damage done, and the previous resolution was amended accordingly.

Repairs to Wood Paving.—The Works Committee reported the receipt of a communication from the Improved Wood Pavement Company with respect to the requirements of the Council that the company should relay certain areas of wood paving under their contract, in which the company made certain suggestions and stated that it was impossible for them to carry out the works at this time of the year. It was agreed to inform the company that if they were not prepared to relay the areas in question the work would be carried out by the Council, who would charge the cost to the company.

Works by Statutory Undertakers : Conditions of Consent.—On the recommendation of the Works Committee, it was agreed that the following should be the conditions of consent for these works :—

1. That three clear days' notice be given to the City Engineer and Surveyor, specifying as far as practicable the places where, and the date and time when, it is proposed to commence the work.
2. That in case of proposed postponement of the date and time of commencement of the work, written notice be given forthwith to the City Engineer and Surveyor, and as long a notice as possible to be given to him of the date and time when the work will be commenced.
3. That pipes be not laid in the roadway at a less depth from the surface than 2 ft., and in the footway at a less depth from the surface than 9 in., except by arrangement with the City Engineer and Surveyor.
4. That the covers of boxes be filled in with material similar to the surrounding pavement, or other hard, durable, and non-slippery material to the satisfaction of the City Engineer and Surveyor.
5. That the work be completed within months from the [*Date of Council's resolution approving or consenting.*]

OBITUARY.

MR. HARRISON.—The death is announced of Mr. Helier Harrison, of Newark, in his forty-sixth year, after a long illness. Mr. Harrison was an articled pupil of Mr. G. Sheppard, and subsequently became his partner, under the style of Messrs. Sheppard & Harrison, of Bargate, Newark. Of architectural works carried out by the firm we may mention the enlargement and improvement of Messrs. Warwicks & Richardsons' premises and brewery, Newark ; a residence at South Parade, Skegness, for Miss Kirkby ; the extension, with infants' classroom, etc., of the Farndon Schools, Nottinghamshire ; the Causeway and ancillary works, Coronation-road, Newark ; the mission hall and enlargement of the schools, Barnby-road, Newark ; shops and warehouses for Mr. J. J. Bates, at Southwell, together with many houses, business premises, and similar buildings in Newark and the neighbourhood.

MR. CHANEY.—Mr. William Henry Chaney, of 39, Essex-street, Strand, and Maryon-road, Old Charlton, architect and surveyor, died on November 10.

MR. JOHN BOWDEN.—The death has just taken place of Mr. John Bowden, formerly of Stretford, and more recently of Moorside, Glossop. Mr. Bowden was, in his early associations with Lancashire, Assistant Surveyor to the Corporation of Preston, a position which he held for four years. From 1868 to 1872 he was District Surveyor for the Borough of Salford, and he then became Surveyor to the De Trafford Estates. For many years Mr. Bowden was in practice in Manchester as an architect, surveyor, and valuer. He was an Associate Member of the Institution of Civil Engineers and Fellow of the Surveyors' Institution. In the inception and successful carrying out of the Royal Jubilee Exhibition at Old Trafford in 1887 the late Mr. Bowden took a foremost part. He was a member of the Executive Committee and of the Council of Guarantors, and Chairman of the Works Committee. The funeral took place on the 20th inst. at Stretford.

GENERAL BUILDING NEWS.

ALL SAINTS' CHURCH, HERTFORD.—The opening of the completed church of All Saints', Hertford, took place a short time ago. The style is Perpendicular, and the church consists of a nave of five bays 73 ft. long by 26 ft. 6 in. wide, with western tower about 26 ft. square, and north and south aisles 20 ft. and 18 ft. wide respectively, with aisles opening into the tower, in which the font is placed. The chancel is a continuation of the nave, and is 42 ft. long by 26 ft. 6 in. wide. There is a south chancel aisle, with separate entrance and porch ; and on the north side of the chancel is an organ transept. There are also clergy and choir vestries on the north of the chancel. The nave and chancel are about 40 ft. from floor to wall plate, and have open timber roofs of somewhat low pitch, covered with red tiles. The aisles have roofs covered with lead, and there is a clearstory of double two-light windows running the whole length of the church. The north aisle is lighted by four-light windows, and the south aisle by three-light windows. The flooring of the sanctuary and choir is laid with encaustic tiles, with polished stone borders, while that underneath the seats is of pitch pine blocks, the passages being laid with Yorkshire flags. The artificial lighting is by gas. The warming is on the low-pressure system, and is worked by two boilers. The stone used for facing the walls both internally and externally is flecked red Runcorn stone from the quarries at Weston Point, near Runcorn, Cheshire. The work of completing the church has been carried out by Messrs. R. Rathbone & Sons, of Atherton, Lancashire, under the direction of Mr. T. Strong, clerk of the works, Mr. G. Bain, and Mr. A. Walsham. The architects were Messrs. Paley, Austin, & Paley, their designs being accepted in competition. The total cost of the scheme, including the portion previously carried out in 1893, was 28,000*l.*

CHURCH, BEESTON HILL, LEEDS.—The new Church of the Holy Spirit at Beeston Hill has just been consecrated. The building is of stone, and is Late Perpendicular in style. The body of the nave and side aisles is on a much lower level than either the chancel or the portion at the west end, where the principal entrances are situated. Thus it is possible for a section of the congregation

to occupy a position somewhat analogous to a west gallery. The architect is Mr. H. A. Prothero, of Cheltenham, and the total cost is estimated at 11,000*l*. Space has been left for the erection of an organ at some future date.

CHURCH, WIMBLEDON.—On the 3rd inst. the new Church of St. Winefride, in South Wimbledon, was opened. The church is in the Romanesque style, and is built externally of red brick with a considerable amount of rough cast for the plain wall surface. The plan consists of a wide nave with narrow aisles serving for passages or processional purposes, a large and elevated chancel, with Lady Chapel on one side, and on the north side a transept, which is connected with the sacristies. There is also a baptistry at the north-west corner. The total internal length is 111 ft., the width being 49 ft., exclusive of the transept. The internal height to the ceiling is 40 ft. from the floor, and externally it is 58 ft. to the ridge from the floor level. The internal treatment consists of large bays formed by lofty semi-circular arches carried on brick piers, which bays are sub-divided below the clearstory windows into two by smaller arches carried by stone columns. The whole interior is finished in brick of two tints of red, relieved by stone voussoirs in the arches and black bands. The roofs are entirely of unvarnished pitch pine. The architect was Mr. Frederick A. Walters, F.S.A., of Westminster, the cost of the church itself having been about 6,500*l*. The builders were Messrs. James Smith & Sons, Ltd., of South Norwood.

NORTH AISLE, COMPTON CHURCH, BERKSHIRE.—The foundation-stones were recently laid of the north aisle of the Parish Church of St. Mary, Compton. The scheme is to re-build the aisle which once existed on the north side of the church, the foundations of which have been discovered during the recent excavations. It has been known that the church once had this aisle, although there is no actual knowledge when it ceased to exist, one, two, or even three hundred years ago. There was an old picture in the parish showing arches in the north wall. The foundations were discovered at a depth of some 5 ft. below the floor level of the present church. They were almost perfect except where they had been disturbed for the purpose of burials. One unexpected discovery was made—that the original church could not have been so wide as the present structure. The diocesan architect, Mr. J. Oldrid Scott, has shown that the Easter tomb and the cover of the font are of the same date, not so the font itself, which is Norman, and, therefore, considerably older than its cover, and he discovered on the font the place of the old lock and key. The base of the font was designed for the font, he thinks, but that the stump of the font has undergone some special treatment, possibly with a view of ornamentation, which was never carried out. The rim of the font is of considerably later design, as also the apex of the font cover. The plans for the new aisle provide extra accommodation for fifty or sixty people. It will have a separate span roof, carried on three pillars and five arches. The contractor for the general building is Mr. E. T. Taylor, of East Ilsley; and for the stonework, Messrs. Pound & Co., of Newbury.—*Newbury Weekly News.*

CHURCH EXTENSION, SWINDON.—The Church of St. Saviour's has recently been enlarged by the addition of an aisle providing accommodation for between 200 and 300 seats. The work was carried out by the members of the congregation from plans prepared by Mr. Francis L. Wait.

METHODIST CHURCH, HINDLEY GREEN.—A new Methodist Church is being built on a site in Leigh-road, Hindley Green, at a cost of about 2,000*l*. The building is to be of red brick, having a terra-cotta front, with a clock tower, and will provide seating accommodation for 375. Messrs. Potts, Sons, & Henning, of Manchester and Bolton, are the architects, and Mr. J. Cocker, of Walton, has secured the contract.

METHODIST CHURCH, CROSS FLATTS, LEEDS.—In the Cross Flatts district of Leeds the Methodist New Connexion are building a new church in Tempest-road, off Dewsbury-road. The site covers an area of 2,960 sq. yds., and the plans—prepared by Mr. W. S. Braithwaite, architect, of Leeds—provide for a church, school, and caretaker's house. The church, which is to be in the Gothic style, will be flanked by an octagonal tower, and surmounted by a spire, and is to give total seating accommodation for 580 people. The plan of the building is cruciform. The adjoining school, which is to include a large assembly hall, will provide accommodation for 500 scholars. All the buildings are to be faced with stone, and the whole scheme is estimated to cost about 7,200*l*.

CONGREGATIONAL CHURCH, BITTERNE PARK, SOUTHAMPTON.—The foundation-stone has just been laid of a new church at Bitterne Park, in Cobden-avenue, west side, between Cobden Bridge and Bullar-road. The building has a frontage of 80 ft. and a depth of 170 ft. The church is late Gothic in style and is cruciform in plan, and will accommodate 500 persons, including the choir and a small end gallery, placed over the entrances. The total length, including the choir and organ space, is 70 ft., the width of the nave, chancel and choir being 26 ft., and the aisles 4 ft. The aisles are passages only to the transepts and nave. There are three separate entrances from the Cobden-avenue, placed opposite each aisle for the purpose of affording direct ingress and egress to the church. Adjoining the entrances are vestibules and cloak-rooms, and a staircase in tower leading to the gallery. The choir arrangements provide for the organ to be placed, facing the congregation, in the back gable, the choir being grouped on the platform in front, and the pulpit at one end of the platform, approached by steps therefrom. On either side of the choir is a vestry for the pastor and deacons, respectively, and under one vestry a chamber is provided for the heating apparatus. Local red bricks are being used for the wallings, with Doulting stone dressings and traceried windows. The roofs will be covered with tiles; internally the walls will be plastered; the joinery work will be of deal, stained in the roof and painted elsewhere. The heating will be by a low pressure, hot-water system; the lighting will be by gas. The heating arrangements and seats are not included in the present contract, the amount of which is 2,386*l*. Mr. John H. Blizard is the architect, and Mr. W. Jupe the builder.

ST. LUKE'S PARISH CHURCH, WALLSEND.—The work of completing St. Luke's Parish Church, Wallsend, is now in progress. The building now proceeding comprises chancel, transept, and morning chapel, and also the completion of the tower and spire. The new chancel will be 42 ft. long, of the same width as the nave, and will give accommodation for fifty persons. Communicating by a large arch on the south is the transept, which will be seated for sixty-four, and to the east of this will be the Lady Chapel, seating twenty-four, and having its own altar for week-day services. The lowest story of the tower on the north side of the chancel will form an organ chamber. The east end of the chancel will be occupied by a five-light window with stone shafts. The Lady Chapel will terminate in an apse, having a sanctuary arch resting on coupled columns, and communicating with the chancel by two arches also resting on coupled columns. The tower will be surmounted by a broached spire rising to a height of 133 ft. to the top of the cross. The architects for the new work are Messrs. Oliver, Leeson, & Wood, of Newcastle; and the contract has been let to Mr. Braithwaite, of Newcastle.

BAPTIST CHAPEL, ABERBEEG, WALES.—The stone-laying ceremony in connexion with the Ebenezer, Glandwr, Baptist Church, Aberbeeg, took place recently. Mr. W. Beddoe Rees, Cardiff, is the architect. The chapel itself will seat between 600 and 700 people, and can be enlarged to accommodate 850 when necessary. In addition, a lecture-hall is provided, with sitting accommodation for 300, together with a suite of classrooms, etc. A feature of the scheme is an institute, which, while connected with the main building, is so arranged that it can be shut off entirely, and has a separate entrance from a side street. The building will be of local stone, with blue Newbridge stone facing, and Corsham Down dressings. The internal woodwork will be selected pitch-pine. The contractor is Mr. David Lewis, Abertillery.

WEST HAM HIGH SCHOOL.—The new building erected in the Grove for the West Ham High School was opened recently by the Mayor (Alderman J. Byford). The building, which is of red brick with stone dressings, occupies a position at the east end of St. John's Church, and forms a compact block of three floors. The central feature is the hall on the ground floor. The hall is 50 ft. long by 32 ft. wide, and has seven class-rooms, a principal's room, and a cloak-room on three sides of it. Six balconies overlook the hall from the first floor. A corridor divides these balconies from seven classrooms, a teachers' room, and the secretary's office on the first floor. The classrooms are so arranged that all obtain direct light from the left side of the scholars. On the sub-ground floor is the dining-room and kitchen department, which is arranged to provide for about fifty students staying to dinner. The playroom, which occupies the rear of the sub-ground floor and adjoins the playground, has the whole of one front enclosed with folding glazed partition, so that in summer it may be thrown open. In addition to the principal entrance to the ground floor and the caretaker's entrance on the sub-ground floor, there are three other entrances, and all five are available as exits in case of emergency. The buildings have been erected by Mr. F. J. Coxhead, contractor, of Leytonstone, whose tender amounted to 9,987*l*., from the designs of Messrs. J. T. Newman & Jacques, architects.

CHURCH HALL, ALLONBY.—The foundation-stone of Allonby Church Hall was laid a short time ago. The building will provide accommodation for nearly 200 adults, and will comprise an entrance lobby, a hall, and a committee-room. There will also be a boiler-house, coalhouse, and lavatory in the rear. Mr. Higginson, of Carlisle, is the architect, and the following is a list of the contractors who have been entrusted with the work:—Mr. William Marshall, Maryport, builder; Mr. Joseph Hill, Wigton, joiner; Messrs. Thompson Brothers, Maryport, plumbers; Mr. J. T. Kellett, Carlisle, slater; Mr. George Nicholson, Wigton, plasterer; Mr. James McKay, Maryport, painter.

ABERGWILI PALACE.—Two years last April nearly the whole of the buildings which formed Abergwili Palace, the residence of the Bishop of St. David's, were burnt, an outbreak of fire having occurred during the night. The restored Palace is now all but ready for occupation. With the small exception of the main walls and of five rooms in the south-west wing, the Palace was virtually burnt out in the fire. With a wing remaining, and the main walls standing, re-building within the old perimeter became a necessity, and the external aspect of the house remains much as it was. Cement in imitation of stone has been generally discarded. Internally are to be found the chief changes, for the whole has virtually been replanned, the chapel and the Bishop's library alone retaining their former positions. The space of the courtyard in the old building has been incorporated into the building in the form of a top-lighted central hall. The kitchen offices and dining-room, which were formerly at opposite ends of the building, have now been brought into reasonable proximity, and a new second staircase has been added in the west wing. The house lies low, and occasion has been taken to lay a solid concrete bed over the whole area, while the basement, formerly subject to floods, has been made waterproof. Bathrooms, a hot-water service, a new sanitary equipment, and an acetylene gas institution have also been introduced. The work has been carried out from the designs and under the supervision of Mr. W. D. Caröe, F.S.A. The builders were Messrs. A. Turner & Sons, of Cardiff, and Mr. Bolwell was clerk of works.

SEAMEN'S REST, EAST INDIA DOCK-ROAD, E.—The Queen Victoria Seamen's Rest buildings in East India Dock-road have been enlarged by the erection of an additional story, so as to increase the accommodation to a total of fifty-six beds, and the whole of the interior has been repaired and renovated, at an expenditure of 1,500*l*., under the directions and superintendence of Mr. J. Gunton.

BRAMPTON CONSERVATIVE CLUB.—The new Conservative and Unionist Club at Brampton was opened recently. The club is situated in the Front-street, and consists of a reading-room on the ground-floor and billiard-room above it, together with a couple of small recreation rooms and living rooms for the caretaker. The premises were formerly the Black Bull, and the old building was pulled down and rebuilt from the designs of Mr. T. Taylor Scott, architect, Carlisle.

A GARDEN CITY SCHEME, BRADFORD.—The Building Committee of the Bradford Corporation have been approached with a proposal for the erection of a number of dove-tailed through houses. A scheme has been prepared by Messrs. Mawson & Hudson, architects, and a description with plans has been sent to the Corporation, but before proceeding with working drawings the promoters have asked for an expression of opinion on the scheme from the Building Committee. One of the proposals is to make the roads 14 yds. wide. In bringing their scheme before the Building Committee, Messrs. Mawson & Hudson state that instead of hammer-dressed wallstones for the fronts and backs they propose rubble walls covered or faced with cement rough cast—hundreds of good houses and cottages all over the country have been erected in this manner—to do away with all out-buildings, have narrower asphalted roads (where not thoroughfares or main streets) doing away with the cost of paving with setts, and to have gardens both back and front. In doing away with backyards and privies and making two fronts to one house it will be a great inducement to the tenants to keep the scullery side as clean and tidy as the living-room side. Two plans are given, with remarks on the style and arrangement of erection. No. 1 plan deals with dove-tailed through cottages. These cottages have accommodation as follows:—Basement, small larder, and coal place; ground floor, living-room and scullery; first floor, two bedrooms and bath and water-closet; and attic, two bedrooms. Instead of having a width of 17 yds.—apportionment for one house and the minimum allowed by the Corporation by-law—of streets, causeways, and backyards to pave and drain there will only be a width of 10 yds. to each house (in asphalt instead of paving), thereby minimising the collecting ground and saving a considerable amount in the cost of drains. The cottages will have on each front a 12-ft. deep garden (the depth might, of course, be increased if required), a 6-ft. deep shrubbery fenced off from the garden with rustic trellis work instead of the usual stone boundary wall, a 6-ft. wide causeway and 6 yds. wide road, both in asphalt. The width from row to row will be 22 yds., though, of course, if the road were a thoroughfare it could be made wider. The No. 2 plan for through cottages shows structures which differ from No. 1 in that they take up a little more frontage, but are less in depth, and also in getting three bedrooms on the first floor, obviating the necessity for attics, unless the cottages are required for very large families. The accommodation is as follows:—Basement, small larder and coals; ground floor, living-room, scullery, bath-room,

and water-closet; and first floor, three bedrooms. The following arrangement is suggested as regards position:—At the back a garden 16 ft. deep, separated from the back road 15 ft. wide with trellis work, making the distance from back to back of two rows 15½ yds.; front garden 12 ft. deep, separated from a 6-ft. shrubbery with trellis work, a 6-ft. wide causeway with an 18-in. wide asphalted road, making 22 yds. from front to front of cottages.

ISOLATION HOSPITAL, TROWBRIDGE.—The new isolation hospital at Trowbridge was opened on the 14th inst. The buildings are of brick, and have been erected from the plans of Mr. W. J. Mann, at a cost of 7,000*l.*, excluding furnishing, etc.

NEW MACHINE SHOP, DEVONPORT DOCKYARD.—The foundations have recently been commenced at Devonport Dockyard of a new machine shop, 200 ft. by 100 ft. The estimated total cost of the new structure and attendant works, exclusive of machinery, is 12,700*l.*, and accommodation will be provided for about 160 men. The contract for the steel-framed superstructure has been placed with Messrs. Francis Morton & Co., Garston, Liverpool. The foundations, railways, and latrines will be carried out by the Director of Works Department.

MUSEUM AND LABORATORIES, LIVERPOOL UNIVERSITY.—On the 18th inst. the new museum and laboratories of the Departmentof Zoology, situated in Brownlow-street, were inaugurated. The building committee appointed by the council selected Messrs. Willink & Thicknesse as architects, and the contract for the erection of the block of buildings containing the departments of natural history, electrotechnics, and geology, was given to Messrs. Thornton & Sons, of Liverpool. The electrotechnics laboratories were finished and opened last July; the geology-rooms are not yet completed. This Zoological Institute has a frontage of 123 ft. on the western side of Brownlow-street, is 41 ft. from front to back, and 84 ft. in height from the street level. It is built of red-pressed brick relieved with white sandstone from the Storeton quarries. On the north it adjoins the Hartley Botanical Laboratory, and on the south the new Electrotechnics Department, which also extends underneath the zoology building in the basement. The building consists of a central tower containing the entrance hall and staircase and some of the smaller rooms on each floor, and of two blocks. In the south block the three floors accommodate (1) the museum with its large gallery; (2) the lecture theatre; and (3) the large junior laboratory at the top of the building. In the north block, on the two lower floors, there are extensions of the museum to receive special collections, and the rest of the space is devoted to the senior classroom, senior and honours students' laboratories, the departmental library, and laboratory and store-room accommodation for the Sea Fisheries Department, the work of the Economic Entomologist, of the Marine Biological Committee, and other practical applications of zoology. In the central tower, along with the staircase, there are small rooms for the professor and two demonstrators, the laboratory assistant, with diagram, chemical, aquarium, photographic, macerating-rooms, and students' lavatories.

SANITARY AND ENGINEERING NEWS.

DOCK, SEAHAM.—The new dock and piers at Seaham Harbour have just been opened by the Prime Minister. Up to six years ago the water area of the docks was only about 12 acres—an outer harbour 3¾ acres, the north dock 2¾ acres, the south dock 2¼ acres, and the tidal harbour 2¾ acres. By the Seaham Harbour Dock Act of 1898 a company was formed, and it was decided to construct at once an up-to-date dock and piers. The contract was let to Messrs. S. Pearson & Son, Ltd., of Westminster, for 378,000*l.*, and the work was begun in 1899. Coal shipping from the old docks has gone on during the construction of the new, and for many months the new dock has been in use, vessels coming and going by a temporary entrance until the new gateway was ready. The old north dock and the old protecting piers still remain, but the remainder of the old harbour has been absorbed in the new. The new dock is 1,000 ft. long by 450 ft. wide, and has an area of 10 acres. It will accommodate vessels up to 5,000 tons burthen, whereas the utmost capacity of the old docks was for ships of about 1,000 tons carrying capacity. The depth of the new dock is 27 ft. 6 in., while at the sill the depth is 25 ft. 6 in., against the 16 ft. of the old docks. The gateway is 65 ft. wide. The new piers run out from the north and south, curving seawards and enclosing a water space of 28 acres. They are built of concrete blocks—the outside ones being stone-faced—and are tunnelled throughout, so that the lighthouse-keepers can reach the lights without danger in the stormiest weather. They have cost, roughly speaking, about 90*l.* per lineal foot. That on the north side is 1,383 ft. long, and that on the south 878 ft. The entrance is 280 ft. wide, and the distance from the entrance to the new gateway is about 900 ft. The channel has been dredged to the requisite depth. Up-to-date staiths and spouts have been erected. They are of a great height, and laid out on the gravity system, enabling them to be very easily worked. They are built to accommodate high-capacity waggons. Steamers up to 2,500 tons burthen have been regularly loaded at them for several weeks past. The company expect to ship 2,000,000 tons annually.

ELECTRICITY WORKS, FOCHABERS, N.B.—Works have been erected at Fochabers for the purpose of providing the town with an electricity supply, the power being derived from the River Spey. Messrs. Drake & Graham, London, supplied the electric fittings, and the engineering work was in the hands of Messrs. Carrich & Ritchie, Edinburgh. The Western Cable Company, London, laid the cables; the power-house was constructed by Messrs. Bannochie & Sons, Aberdeen; the walls by Messrs. Robert Mitchell, Huntly, and William Legge, Fochabers; and the intake was executed by Messrs. Sellar & Co., Aberdeen. The architect of the works was Mr. Thomson, Fife-Keith, who was represented by Mr. James H. Marshall. Mr. Alex. Keir and Mr. George Russell had charge of the workmen.

KEYHAM DOCKYARD EXTENSION.—It is only by comparisons that the general public can appreciate the magnitude of undertakings so colossal as the dockyard extension at Keyham, and the means of comparison is supplied by the fact that whereas there are 39 acres in Devonport Park, the acreage of the extension works is 114. As a further comparison, it may be mentioned that the closed basin on the works is 35¼ acres in extent, or only 3¾ acres less than the park. The original contract entered into by Sir John Jackson, Ltd., for the completion of their part of the work was about 3,000,000*l.*, but the original scheme has been considerably altered and extended, and it is probable that when the whole works are completed the total cost, including the expenditure on factories, workshops, and general equipment, will be not much less than 6,000,000*l.* The works have been carried out under the provisions of the Naval Works Act of 1895, and were commenced in February, 1896. They have, therefore, been in hand nearly ten years, and during the greater part of that time as many as 3,400 men have been employed. As the result of the employment of so large a number of men, there was created at Weston Mill a new residential district, inhabited almost exclusively by men engaged on the works and their families. Through the consideration and public spirit of Sir John Jackson, it was in some respects a "self-contained" community, with its own mission church and schools. In other parts of the three towns, the employees of the extension works also found habitation. Many of the men have now left the district to find employment in the north country or on public works which the firm have taken in hand in other parts of the world. Still there are about 1,700 men employed on the extension works. It is expected that the contract will be completed by the summer of 1906, and that the works will be formally opened in the autumn. The "beginning of the end," so far as the contractors' work is concerned, may be said to have been marked on the 13th inst., when sea-water was admitted to the tidal basin at the southern end of the works. The party included Sir John Jackson, Mr. Whately Eliot (Superintending Civil Engineer), Mr. G. Crocker, C.B. (Civil Technical Assistant to the Admiral-Superintendent), Mr. Chas. Colson, C.B. (Deputy Civil Engineer-in-chief, Navy Loan Works, Admiralty), Mr. G. H. Scott (Sir John Jackson, Ltd.), Mr. R. H. Andrews (Chief Engineer, Devonport Dockyard), and others. The tidal basin into which sea-water was first admitted is 10 acres in extent, and will give a depth of water not less than 33 ft. in any part, but as the rock at the entrance from the Hamoaze has not yet been removed, the full depth of water will not be available for some time. Outside the granite wall of the basin is a cofferdam, through which, as well as through a mass of rock and *débris*, ten sluices have been cut, and it was through these that the water was first admitted, the doors of the sluices being operated from a platform over the cofferdam. It may be mentioned that, in addition to the closed basin of 35¼ acres and the tidal basin which is now being filled, there are between the two basins three large graving docks and a lock entrance. The tidal basin has a length of quayage of about 2,100 ft., and the closed basin 4,500 ft. of quayage: while the length of the three docks is 480 ft., 741 ft., and 745 ft. respectively, and the entrance lock, which can be used as a dock, is 730 ft. long inside caissons. Messrs. Easton & Co., Ltd., of Erith Ironworks, Kent, have manufactured and laid down all the machinery belonging to the docks, consisting principally of ten marine type return tube cylindrical boilers, with a working pressure of 120 lb. to the square inch. Of the engines, the most important are two large duplicate, horizontal, centrifugal pumping engines, with a pumping capacity of 15,000 tons per hour, and also the main reciprocating pumping engines, three-throw in duplicate, capable of pumping 1,500 tons per hour. The machinery has been constructed and erected under the supervision of Mr. A. D. Byrne, formerly of Plymouth, who has charge of the pumping operations.—*Western Morning News.*

FOREIGN.

SWITZERLAND.—The new bridge across the Rhine at Basle was opened on November 11; the bridge has been built from designs by the firms A. Buss & Co., of Basle, and Ph. Holzmann & Co., of Frankfürt.——Dr. Maximilian Maurer has been elected Director of the Meteorological Institute at Zürich in the place of the late Dr. Robert Billwiller.

GERMANY.—The new museum at Mannheim is to be built from designs by Professor Bruno Schmitz, of Charlottenburg.——A new hospital is to be built at Bernkastel at a cost of 100,000 marks.

ARGENTINA.—The Government has approved the plans for the water supply, sanitation and drainage works of the port lands, at a cost of 1,786,111 paper dollars. Part of the work, estimated to cost 1,151,000 dollars (about 100,700*l.*), will be done by contract. No tenders have yet been called for. According to the *Bulletin* of the French Chamber of Commerce of Buenos Ayres, the Argentine Government has also sanctioned the following works:—(1) The construction of a post and telegraph office at Buenos Ayres at the cost of 3,000,000 paper dollars (about 262,500*l.*); and (2) the construction of a landing stage and refuge for immigrants. The cost of these works, exclusive of drainage and electric lighting (for which separate tenders will be invited), is fixed at 1,265,225 paper dollars (about 110,706*l.*).

BUILDING MATERIALS AND HOUSE BUILDING IN ZANZIBAR.—In his report on the trade and commerce of Zanzibar for the year 1904, Mr. Vice-Consul Sinclair states that the imports under the heading of building materials include ready-made doors and windows and teak from India, deals and match-boarding from Norway, and cement, paints, oils, and corrugated iron sheets principally from the United Kingdom and Germany. It may be anticipated that the fine timber from the forests of British and German East Africa, and perhaps also from Madagascar, will before long come into more general use, though probably teak will always command a good sale on account of its immunity from the attacks of the white ant. The ordinary native house is built on a framework of upright pales, known as "boriti," a large quantity of which comes every year from British East Africa; on each side of these are tied, with coir rope, thinner sticks called "fito," the interstices being filled with mud and sometimes lime plastered; the thatch is usually made of the leaves of the cocoanut palm cleverly twisted, and known as "makuti"; this thatch is not, however, entirely impervious to the heavy rains, and those natives who can afford it always prefer to use corrugated iron, in spite of the heat which it radiates. Corrugated iron is also largely used for roofing by the European and Indian population, though tiles from Mangalore are now taking its place in all the principal new buildings erected by the Government and the richer residents. It is possible that a really sound roofing material, which can be easily fixed and is impervious to tropical rains and heat, might find a good market, provided that it could be sold at a reasonable price.

SOUTH AFRICA.—Sir Walter Hely-Hutchinson is to lay the foundation-stone of the new girls' school at Roodebloom, Woodstock, the contract price of which is 15,838*l.* It will accommodate a thousand scholars, and is intended to be the best school of its kind in Cape Colony. Messrs. McGillivray, Grant, & Co., of Cape Town, are the architects.——A new lighthouse, costing 5,000*l.*, has been erected at a spot called Aliwal Shoal, near Durban, Natal.——A new building, to be used as an institute for seamen, has just been completed in Cape Town. The foundation-stone of the building was laid twelve months ago by the Princess Christian.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—The company trading under the title of "Wall Paper Manufacturers, Ltd.," has purchased, as from January 1, 1905, the Lincrusta business of Messrs. Fredk. Walton & Co., Ltd.

"LUCAL" LIQUID FUEL SYSTEM.—At the Princes Dock power station of the Clyde Trust, Glasgow, one of the boilers is fitted with "Lucal" burners for the use of oil as fuel. The boiler to which we refer is of the marine type, measuring 10 ft. long by 11 ft. diameter, and having two furnaces. The boiler is set in brickwork forming external flues. Each furnace tube has three oil burners, which were tested in May last by Messrs. Flannery, Baggallay, & Johnson, of London. Oil for feeding the burners was supplied by gravitation from a tank, steam for injecting the fuel being drawn direct from the boiler under test. Most of the air required for combustion was drawn into the furnaces by the chimney draught, although a proportion entered through the burners owing to the induced draught established by the flow of oil and steam. From the report of the engineers mentioned it appears that the average evaporation of water, from and at 212 deg. F., was 14 lb. per pound of oil. This satisfactory showing represents an evaporative

efficiency of 77 per cent. An interesting point is that the fuel employed is blast furnace oil, with the low calorific value of 17,600 thermal units per pound, which burned steadily, and gave a clear blue flame. It is to be regretted that the inspecting engineers were unable to observe the effect of the burners in diminishing the amount of smoke emitted from the chimney, as three other boilers burning coal were discharging from the same shaft during the conduct of the tests.

WAR MEMORIAL, GATESHEAD.—The South African war memorial, which has been erected in Saltwell Park, Gateshead, was unveiled by Lieut.-General Sir John French on the 11th inst. It consists of a decorated column of granite, surrounded by a life-size bronze-winged figure representing "Peace crowning the Heroes." The height is 24 ft. from the ground. Mr. F. W. Doyle Jones, soulptor, of West Hartlepool and Chelsea, executed the work, his design being accepted in open competition.

"CALENDARIUM LONDINENSE."—We noticed last year the sheet calendar issued by Mr. Elkin Matthews for 1905, with an etching of a London scene by Mr. W. Monk filling the upper half of the sheet. The "Calendarium" for 1906 is even better. The etching by Mr. Monk shows a fine view from opposite the bottom of Ludgate Hill, with the dome of St. Paul's rising in the middle of the composition, above a mass of street buildings. The calendar is arranged in a more decorative form than last year, and the sheet is one which an artist can hang up with satisfaction.

BIRMINGHAM MASTER BUILDERS' ASSOCIATION.—The annual meeting of the Birmingham Master Builders' Association was held at the Grand Hotel Birmingham, on the 13th inst., Colonel Barnsley in the chair. The committee, in presenting their annual report, regretted to still have to record the fact that in common with most trades in the city the building trade during the last year had been in a very depressed state. With this depression there had been a corresponding increase in the keenness of competition. There were, however, signs of increased activity amongst manufacturers, and it might be hoped this would bring about a more prosperous state of affairs in the building trades. In the last annual report reference was made to the recommendation of the committee as to the increase in the number of prizes to be offered for competition by students in the classes connected with the building trade at the Municipal Technical School. After consultation with the headmaster at the school, it had been arranged that the 5*l.* 5*s.* offered by the Association should be divided amongst the following classes:—Sanitary science, 1*l.* 1*s.*; quantity surveyors, 1*l.* 1*s.*; masons, 1*l.* 1*s.*; carpenters (practical), 1*l.* 1*s.*; carpenters (drawing), 1*l.* 1*s.* A deputation from the Association waited on the Corporation Water Committee to urge the importance of supplying quantities when inviting tenders for work of any magnitude. An amendment of the standing orders in Parliament, obtaining a *locus standi* for Associations, had been secured mainly through the instrumentality of the Metropolitan Dairymen's Society. The committee had contributed towards the costs incurred in placing the matter before the Court of Referees. The committee had decided, after careful consideration, to refrain from disturbing the trade by giving notices to the operatives of any alterations in working rules, although, in their opinion, existing circumstances would have justified notices being given for a reduction in wages. The claims of the National Reserve Fund of 10,000*l.* had already been brought to notice. Up to the present promises and contributions had been received from members amounting to 416*l.* 6*s.* 6*d.* The total amount allocated for collection in the Midland area was 1,600*l.* The committee strongly appealed to those members who had not yet promised a contribution to give the matter their prompt consideration, as it was felt very desirable that all members should interest themselves in the project, which was undoubtedly of great importance to the trade. It was hoped that the Birmingham Association would show such a lead as would ensure the collection of the sum allocated to the Midland Centre. A set of rules had been agreed to by the members of the National Federation and the various societies of operative masons, carpenters, and bricklayers for the establishment and government of conciliation boards in the building trades, with a view to obtaining an amicable settlement of disputes without resorting to strikes or lock-outs. The committee had arranged with the above-mentioned branches of the trade for these rules to apply in this district. The balance-sheet showed total ordinary receipts for the year, 216*l.* 0*s.* 9*d.*, which, with the balance from last year, made a total of 403*l.* 5*s.* 5*d.*, and the various disbursements to 208*l.* 1*s.* 2*d.*, leaving a sum of 195*l.* 4*s.* 3*d.* to the credit of the Association.—The report having been adopted, officers for the year were chosen, Mr. Whitehouse being elected President, Mr. Thomas Johnson vice-president, and Mr. Bigwood secretary. The retiring President was accorded a vote of thanks.—The annual banquet followed at the Grand Hotel, and was attended by 200 gentlemen representative of the various branches of the trade. Mr. J. B. Whitehouse (President) occupied the chair, and Mr. T. Johnson was in the vice-chair. The toast "Success to the Birmingham Builders' Association and the Trade of the City" was proposed by Lieutenant-Colonel J. Barnsley, who pointed out that combination had engendered mutual respect between capital and labour. It was capable of wider and more sympathetic development. Progress would continue to be gradual, but signs were not wanting that common sense and sweet reasonableness were taking the place of the old brutal methods of the lock-out or the strike. During the year considerable advance had been made in the establishment of national conciliation boards for the settlement of disputes. Combinations of employers were the natural sequence of trades unions.—The toast was honoured, and the President responded. He regretted that in the building trade many had resorted to the disastrous system of price cutting.—Mr. W. Sapcote gave the toast of the "Architects and Surveyors," and Mr. Cooper and Mr. A. Rowse replied.—Mr. Thomas Johns submitted the toast of "Kindred Associations." Their primary objects were to prevent disputes. It was a fallacy to suppose that their mission was to reduce wages. They were prepared to pay fairly for a fair day's work. He hoped every encouragement would be given to apprentices to receive technical education. If they did this both builder and artisan would benefit. The advantage was mutual.—The toast was replied to by Mr. John Price, Mr. H. Willcock, and Mr. C. H. Barnsley.—The other toast honoured was the "Visitors," submitted by Mr. A. S. Smith, and acknowledged by Mr. F. W. Amphlet.

BUILDING BY-LAWS, DURHAM.—In his quarterly report to the County Council, Dr. T. Eustace Hill, Medical Officer to the county of Durham, refers to the question of rural building by-laws. In districts, he says, which are purely rural or agricultural in character, building by-laws different from those necessary for urban districts may with advantage be adopted, but in many of the so-called rural districts in this county, such as Chester-le-Street, Auckland, Durham, and Easington, the conditions under which the bulk of the population live are essentially urban, and by-laws suitable for purely rural districts would be most undesirable in these areas. In some of our populous rural districts action has already been taken for the remodelling of the by-laws, and, if effected, will, the doctor very much fears, result in less sanitary houses being erected in the future. In the Durham rural district the by-laws require that the sites of all new buildings shall be covered with impervious material, so as to ensure the exclusion of ground air and dampness, but Dr. Hill understands that, in the by-laws which have recently been remodelled, this most necessary and important requirement has been modified. The Medical Officer of Health of the Chester-le-Street rural district, in his annual report, expresses strong disapproval of some suggestions which are being made for the modification of the by-laws for that district, which will have the effect of diminishing the height of certain rooms in a house, and of reducing the area of the yards of dwellings. While it may be possible to modify by-laws in certain particulars, especially as regards building materials, so that the cost of erecting workmen's dwellings may be reduced, it is most undesirable that any modification should be permitted which will in any way diminish the healthiness of new dwellings. Any modification of the by-laws which does away with the necessity for the cementing of the sites of dwelling-houses, or which diminishes the height and ventilation of living-rooms, or the area of the house yards, is a retrograde and undesirable step from the health point of view, especially in a populous county like Durham, where the great majority of the people live under urban conditions. The doctor thinks the attention of the Local Government Board should be called to the serious results which would follow in this country from any relaxation of the sanitary requirements of building by-laws, and he recommends that the Board should be asked to inform the County Council of any proposed modification in the sanitary provisions of the building by-laws in force in this county before they receive the approval of the Board.—*Stockton Herald.*

INCORPORATED CHURCH-BUILDING SOCIETY.—This Society held its usual monthly meeting on Thursday, the 16th inst., at 7, Dean's-yard, Westminster; the Rev. Canon C. F. Norman in the chair. Grants of money were made in aid of the following objects, viz.:—Building new churches at Plymouth, S. Simon, 175*l.* for the first portion; South Tottenham, S. Philip, Middlesex, 150*l.* for the first portion; Churchdown, S. Andrew, near Cheltenham, 100*l.* for the first portion, in lieu of a former grant of 50*l.*; and Plaistow, S. Peter, Essex, 225*l.* in lieu of a former grant of 200*l.*; and towards enlarging or otherwise improving the accommodation in the churches at Barry, S. Paul, Glam., 100*l.*; Cardiston, S. Michael, near Shrewsbury, 25*l.*; Little Ilford, S. Barnabas, Essex, 150*l.*, making in all 250*l.*; Llandefalle, S. Maethllu, near Talgarth, Brecons., 35*l.*; Nenthead, S. John, Cumberland, 10*l.*; Newchurch, S. Peter and S. Paul, Kent, 25*l.*; Rye Harbour, The Holy Spirit, Sussex, 30*l.*; S. Mary Bourne, S. Peter, near Andover, Hants, 35*l.*; Seaton Hirst, S. John, near Morpeth, 100*l.*, and Haverfordwest, S. Mary, Pembs., 120*l.* in lieu of a former grant of 75*l.* A grant was also made from the Special Mission Buildings Fund towards building the first portion of a mission church in the parish of Christ Church, Tunstall, Staffs., 25*l.* The following grants were also paid for works completed:—Richmond, S. John, Surrey, 55*l.*; Llantwit Major, S. Illtyd, near Cardiff, 50*l.*; Wreningham, All Saints', near Norwich, 20*l.*; Caerphilly, S. Martin, South Wales, 75*l.*; Brandon, S. John, Co. Durham, 50*l.*; Jarvis Brook, S. Michael and All Angels, 80*l.*; Callowland, Christ Church, near Watford, 200*l.*; Ferndale, S. Dunstan, Glam., 100*l.*; Lynton, S. Mary, Devon, 45*l.*; S. Ives, S. Nicholas, Cornwall, 50*l.*; Leyton, S. Edward, Essex, 50*l.*; Charlton in Dover, S. Bartholomew, 30*l.*; and Chelsfield, Kent, 25*l.* In addition to this the sum of 505*l.* was paid towards the repairs of thirty-two churches from trust funds held by the society.

HUDDERSFIELD BUILDERS' EXCHANGE.—The annual meeting of the Huddersfield Builders' Exchange was held on the 18th inst. at their rooms, Northumberland-street, Huddersfield. Mr. J. W. Mallinson, who was elected President for the ensuing year, presided over a large attendance. Mr. W. B. Evans (treasurer) and Mr. C. Wheawill (auditor) were re-elected. Mr. J. E. Sykes, the secretary, presented his annual report, which showed a slight decrease in the membership.

NEW ROADS AND THE BUILDING ACT.—The Works and Highways Committee of Lewisham Borough Council on Monday reported having received a letter from the London County Council referring to a communication from the Borough Council as to the necessity for providing outlets into Bromley-road, for the roads on the St. German's Estate, Catford, and for linking up these roads with those on the Forster Estate. The London County Council pointed out that, while they considered the application unobjectionable, they in 1901 refused their consent to the formation of certain of the roads on the two estates in question, on the ground that no arrangement had been made to provide communication between them and the existing main highways, and that their decisions were subsequently reversed by the Tribunal of Appeal. In these circumstances they had no authority under the London Building Act to deal with the matter. The London County Council also pointed out that by the London Building Acts (Amendment) Bill, introduced into Parliament last session, they sought to obtain authority to deal with questions of this kind, but the Bill was not strongly supported by the Metropolitan Borough Councils, and did not become law. The Works and Highways Committee of Lewisham Borough Council, referring to the foregoing, state that the London Building Acts (Amendment) Bill of last session dealt with a number of questions, some of which were deemed objectionable. Lewisham, however, raised no objection to the proposals of the London County Council in relation to the point under consideration.

APPOINTMENT OF SANITARY OFFICERS.—The Local Government Board has sanctioned the appointment of the undermentioned persons as sanitary inspectors in metropolitan boroughs as follows:—Fulham, Mrs. M. E. Davies (in the place of Miss J. J. Brown, resigned), as from October 30, 1905; Lewisham, Miss Irene Whitworth.

GAS LIGHTING AT BUCKINGHAM PALACE.—A great improvement has been effected this week in the lighting of the courtyard and roadway in front of Buckingham Palace by the substitution of a high-pressure gas installation for the ordinary incandescent burners formerly in use. The new burners are Sugg's high-pressure burners fitted with specially prepared mantles, and the pressure of the gas supplied to the burners is raised to about 16 inches by means of a small gas engine and compressor.

SALE OF ARCHITECTURAL AND ARCHÆOLOGICAL BOOKS.—A sale of books, manuscripts, and autographs, the property of the Earl of Cork and Orrery, removed from Marston, Frome, took place at Christie's Rooms, King-street, St. James's, on November 21, 22, and 23. Amongst the lots sold, and prices realised, were the following:—"Vitruvius Britannicus, or the British Architect," by Colin Campbell, with 300 large engravings of mansions and public buildings in Great Britain, 3 vols., 1715-31, and "Architecture of Painting, Statuary, etc.," by James Leoni, 3 vols., 1726, 1*l.* 12*s.*; "Westmonasterium, or the History and Antiquities of St. Peter, Westminster," by John Dart, 1742, and "History and Antiquities of the Cathedral Church of Canterbury," 1726, 1*l.* 14*s.*; "Book of Architecture," by James Gibbs, 1728, containing designs of building and ornaments, 150 fine plates, 2*l.* 12*s.*; a second edition of the same, 1739, together with G. Turnbull's "Treatise on Ancient Painting," 1740, and A. Pozzo's "Perspective Proper for Painters and Architects," 1693, 2*l.* 2*s.*; T. J. Carver's "New Designs of Ceilings, Chimney-pieces, Picture Frames, Stands for China, Grates, etc.," four parts, 56 plates with 150 designs, 1761, 5*l.* 15*s.*; "Londinopolis, or Perlustration of the City of

London," fine folding view of London showing Shakespeare's Globe Theatre, etc., by James Powell, bound in old calf, published in 1657, 3*l.* 10*s.*; "Designs of Inigo Jones and Others," by Isaac Ware, 53 plates engraved by Fourdrinier, no date, 3*l.* 3*s.*; "Views of Whitehall and the Horse Guards," etc., by Inigo Jones, 1*l.* 15*s.*; "Some Designs of Inigo Jones and William Kent," with 50 plates engraved by Varly, 1744, 3*l.*; "Inigo Jones's Designs, consisting of Elevations and Plans for Publick and Private Buildings," by W. Kent, 1727, and Batty Langley's "Plans of Windsor Castle and Radcliffe Library, 1743, 3*l.* 10*s.*; "English Architecture, or the Publick Buildings of London and Westminster," with plans of streets and squares, 123 folio plates, no date, 1*l.* 12*s.*; "The Architecture of A. Palladio, in four books, revised, designed, and published by Giacomo Leoni," 5 vols., 1715, and Isaac Ware's "The Four Books of Andrea Palladio," 1738, 2*l.* 5*s.*

PROPOSED NEW INFIRMARY, PLYMOUTH WORKHOUSE.—On the 21st inst. the Special Purposes Committee of the Plymouth Board of Guardians brought forward plans for a new workhouse infirmary which had been drawn up by Messrs. Thornely & Rooke, architects. The revised scheme provides for 300 patients and twenty-one nurses, and is based on the estimate of the architects for 100*l.* per bed. The wards are to be grouped centrally round the administrative block, which comprises the usual offices for such an institution. The site is upon the garden attaching to the present workhouse premises. The adoption of the report having been moved and seconded, Mr. T. G. Mill said he thought they should have fireproof floors. It would be a death-trap in case a fire broke out. Mr. Govier asked what was the difference between the original plans and the plans at present before the board, and the comparative estimates. The Clerk said the former plans made provision for tuberculosis patients, a new laundry, and 308 patients, and the estimated cost was 56,000*l.* These things were omitted from the present plans, which provided for 300 patients, and the cost was 30,000*l.* Mr. Govier moved as an amendment that the committee's recommendation be referred back for a fortnight, so that the guardians might thoroughly investigate the plans. He was in favour of fireproof flooring, and he also thought the walls should be strong enough to bear another story. Mr. Hawke seconded. There were no day rooms or laundry included in the present plans He would also like to see a three-storied building instead of a two-storied building. The Rev. W. H. Child said he regretted that no provision was made to deal with consumptive patients, and also the omission of an operating theatre. But these things might be added later on, and meanwhile they should press forward the present plans. The Clerk said there was a room which could be used for an operating theatre, although it was not what would be expected where a large number of students usually attended. Mr. A. N. Coles said as a member of the committee he had given long and careful consideration to the plans, and in his opinion they were satisfactory. All the points raised that day were pointed out in committee and fully considered. As regarded the thickness of the walls, it was estimated that at the end of twenty years they could build an extra story if desired. Every provision would be made against fire, although it was not decided to have fireproof flooring. Mr. Tamlyn said he should vote for the plans being sent to the Local Government Board. He believed the Local Government Board would send back the plans and insist on the inclusion of fireproof floors, a general room for convalescents, and provision for consumptives. He did not believe they would be allowed to go forward with any scheme that did not include these things. The amendment having been rejected, the original motion was agreed to. The plans of the new infirmary will therefore be sent to the Local Government Board for approval.

BEDFORD COLLEGE FOR WOMEN, LONDON.—A building and endowment fund (150,000*l.*) has been opened for the provision of a site and new premises consequent upon the approaching expiration of the two leases under which the premises in York-place, Baker-street, are held, the freeholder having declined to extend the leases. The College was first opened in Bedford-square fifty-six years ago; it was then removed to a house on the east side of York-place, where two adjoining houses were afterwards acquired and altered for purposes of the College. Towards the sum of 50,000*l.*, which is urgently required for the speedy acquisition of a suitable site, 20,000*l.* is thus far obtained, and Lady Tate will give, it is stated, 10,000*l.* for a library in memory of her late husband.

OXFORD MILITARY COLLEGE.—The College buildings at Temple Cowley, near Oxford, which have just been offered for sale, extend over 3½ acres, and comprise the XVIIth century manor house, a chapel built in 1870 for the former Diocesan School after designs by Mr. E. G. Bruton, of Oxford, and an extensive range of workshops, which were lately vacated by a firm of mechanical engineers, Alfred Breese, Ltd. The buildings were taken over thirty years ago, and were then altered and enlarged for the purposes of a college for the preparation of candidates for commissions in the Army.

CHERTSEY BRIDGE.—We read that an examination is about to be made into the condition of the fabric of Chertsey Bridge. There are indications of settlement at the western end, by the Surrey side, of the structure, where, it is stated, a long crack or fissure is manifest between the stone facing and the brickwork. The building of the bridge, which has seven segmental arches, was begun in 1783 by Brown, of Richmond; the work was carried on and completed in 1786 by James Payne, who at that time resided at Says, near Chertsey, and was building the bridges at Walton and Kew. Payne used Purbeck for the stone work of Chertsey Bridge; the cost, about 13,000*l.*, was borne by the county funds of Middlesex and Surrey.

CAPITAL AND LABOUR.

STATE OF THE BUILDING TRADES.—Employment in the building trades continued dull during October, and on the whole was much the same as a month ago. Bricklayers, slaters, and tilers in England and Ireland, and masons in Scotland, report a slight improvement; but with carpenters and joiners, plumbers, and masons in England employment was worse. Compared with a year ago employment was slightly worse. With carpenters and joiners, however, it was about the same, and with bricklayers, and in Scotland with slaters, there was some improvement. From some towns in Lancashire also improvement was reported. The percentage of Trade Union carpenters and joiners unemployed at the end of October was 8·2, as compared with 7·1 per cent. a month ago, and 8·3 per cent. in October, 1904. The percentage of Trade Union plumbers unemployed at the end of October was 12·0, as compared with 8·9 a month ago, and 9·3 a year ago.—*Labour Gazette.*

YORKSHIRE BUILDING TRADES FEDERATION AND DISPUTES.—The monthly meeting of the Yorkshire Federation and Building Trade Employers was held at the Grosvenor Hotel, Hull, on the 16th inst., Mr. P. Rhodes (Leeds) presiding over representatives from Barnsley, Bradford, Huddersfield, Leeds, Sheffield, York, Scarborough, Bridlington, Halifax, Hull, Malton, Wakefield, Dewsbury, and Harrogate. A discussion took place on the arrangements which have been approved by six operatives' societies, representing a membership of 134,000, and the National Federation of Building Trade Employers. These provide for the reference of all matters in dispute to local and national boards of conciliation. One of the principal clauses stipulates that no strike or lock-out shall take place until the question in dispute has been before the National Conciliation Board. The Conciliation Boards are arranged in three grades—local, central or county federations, and national—any dispute being first considered by the local boards, and failing a settlement, it is to be referred to the county board, and in case of a failure to settle it is again referred to the national board, and should this fail to bring about a settlement, powers are given to refer the matter to arbitration. The indebtedness of the Federation to Messrs. Marsden, Townsley, & Stanley, who were the primary inaugurators of the scheme, was expressed by several members. The scheme has already been adopted by the central bodies of the masters and men in three-quarters of the kingdom, and augurs well for a lasting and beneficial effect, not only in the building trades immediately affected, but in the general inland commerce of the kingdom. At the close of the business the members of the Hull Association entertained the council to tea, which was provided by Mr. Foster, and a hearty vote of thanks was accorded the Hull Association, the President (Councillor G. L. Scott, J.P.) responding.—*Eastern Morning News.*

Legal.

ACTION BY ARCHITECT FOR FEES.

THE case of Chambers *v.* Edwards and Wallace came before the Lord Chief Justice and a special jury, in the King's Bench Division, on the 21st inst.—an action by the plaintiff, Mr. William Isaac Chambers, A.R.I.B.A., to recover from the defendants, Mr. William Maitland Edwards and Mr. William Alfred Wallace, 1,200*l.* odd for work and labour done.

Mr. Moresby appeared for the plaintiff, and Mr. Walter A. Shaw for the defendants.

Mr. Moresby, in opening the case, said the plaintiff, an architect, sued the defendants to recover 1,200*l.* odd fees for professional work, and for moneys expended by him as architect for the defendants at their request. The main defence relied upon was that a sort of verbal agreement was made between the parties that the plaintiff was not to be paid anything unless two building schemes, in respect of which the claim arose, were carried out and the buildings actually erected.

His lordship asked if there was any dispute as to the amount?

Mr. Shaw said there was no question of amount at all in dispute.

Mr. Moresby, continuing, said the facts were these: There were two quite distinct schemes, and a separate claim arose in respect of each one. Both the schemes related to building sites at Eastbourne. The first came about in the following way. In June, 1900, the defendants, who were undoubtedly associated together in the scheme, called upon the plaintiff at his office in London, and told him they had got possession of a site at Eastbourne, that they had arrranged that the building scheme should be financed through a London firm of solicitors, and they asked the plaintiff to get out a sketch showing a proposed block of flats to be erected on the site. Plaintiff prepared the sketch and submitted it to the defendants, and they were very much pleased with it. Edwards, in July, 1900, ordered the plaintiff to prepare a complete set of plans, elevations, and sections. Plaintiff was told that there was no limitation as to height, and that seven stories would be about the right thing. Plaintiff then prepared plans for a block of flats seven stories high, and delivered them to the defendants in July, 1900. Edwards took the plans to the architects of the Duke of Devonshire, but they were rejected because the proposed building was too high. That was not, of course, the plaintiff's fault. The Duke's architects said that the plans would have to be amended. Later on in July Edwards told the plaintiff what had taken place, and that he wanted plaintiff to abandon the old plans and to make a new set, Edwards producing a rough sketch of what he desired. These plans plaintiff prepared, and at the request of Edwards had them printed at a cost of 6*l.*, which plaintiff paid. All that was with regard to the first scheme. Edwards submitted these amended plans to the Duke's architects. On July 4, 1901, plaintiff wrote to Edwards asking him for 20*l.* on account of his fees, saying that if that amount was paid the payment would merge in the commission. The next thing that happened was that in July defendants instructed a quantity surveyor to get out the quantities on the plans which had been made. This was done, and it was estimated that the building would cost between 28,000*l.* and 30,000*l.* On October 15, 1901, the plaintiff wrote to Edwards asking if it was intended to proceed with the building. He received no reply to that letter. Early in 1902 plaintiff became seriously ill, and was in bed until June. But on February 24, 1902, he got his solicitors to write to Mr. Wallace asking for 25*l.* formally on account, but Wallace did not reply to that letter. In June, 1902, it appeared that the defendants had succeeded in getting an option over another site at Eastbourne from a gentleman who was interested in the property. Defendants called upon plaintiff at his office, and told him of the scheme. They said it was impossible for them to pay him anything in respect of the first scheme then, and asked him to let that matter stand for a time, promising him if he would that he should be the architect for the second scheme, which would certainly be a success. On June 1, 1902, Edwards gave the plaintiff a cheque for 25*l.* on account of his fees in respect of the first scheme. Plaintiff said he gave a receipt (but defendants did not produce it) to the effect that the 25*l.* was received on account of professional fees. Defendants then instructed plaintiff to prepare a second lot of plans, no special instructions being given him as to the cost of the building or the height. In July, 1902, plaintiff prepared a complete set of plans, elevations, sections, and specification. Wallace paid 10*l.* for printing these. When these plans got before the Duke's architects difficulties arose, these architects considering that only two houses should be erected on the site, the defendants proposing to erect many more, and it was further said that the proposed buildings would offend against the rights to light of houses on the other side of the road. In August, 1902, Wallace instructed plaintiff to get out amending plans by reducing the height of the flats and also their length. This not satisfying the Duke's architects, Wallace, in September, 1902, instructed plaintiff to alter the plans by taking off one story altogether. On September 29 the plans were passed, and that was the last the plaintiff heard of the second scheme. All that the plaintiff had got for his work from the defendants was 70*l.*, which amount the defendants counter-claimed, for alleging that it was a loan to the plaintiff. The total amount of the plaintiff's claim with regard to the first scheme was 774*l.* 12*s.*, made up of out-of-pocket expenses and the usual architects commission of 2½ per cent. on 30,000*l.*, the estimated cost of the building. On the second scheme the total claim was 516*l.* 16*s.*, made up of out-of-pocket expenses and 2½ per cent. on 20,000*l.*, the estimated cost of the second building.

The plaintiff having given evidence in support of the learned counsel's opening statement, in cross-examination by Mr. Shaw said that a scheme for the erection of certain flats at Kensington having fallen through, Edwards said that he thought Eastbourne would be a good place to

put up flats, and he (plaintiff) agreed with him. Edwards did not tell him when discussing the matter that he had not got a site at Eastbourne, and he never said that the scheme was a pure speculation on their part. There was not a word of truth in the suggestion. Edwards made suggestions for the plans of the schemes. The first scheme was for flats in Cliff-road, adjoining Chatsworth-gardens, Eastbourne. When he asked, in July, 1901, for 20*l.* on account of professional work done he did so because he understood the defendants were short of money.

His lordship said it was very simple why plaintiff only asked for 20*l.* It was on account of his commission, which he was entitled to as the work proceeded.

Mr. Shaw: Is it not a fact that the defendants and you together agreed to abandon this scheme in favour of another site?—No, I never agreed to any such thing.

Cross-examination continued,

He never understood that he was to prepare plans for the second scheme on the understanding that he would get paid if the scheme was financed. He should not have undertaken the work of drawing plans on those terms.

Re-examined,

He had never once done any speculative work.

Mr. Thos. Howden, F.S.I., a quantity surveyor, examined, said that in July, 1901, he made, at the plaintiff's request, an approximate estimate of the cost of the building on the first scheme. It came out at about 28,000*l.* According to instructions received from the plaintiff he got a builder's estimate. He afterwards took out quantities from plaintiff's plans. He did that work for Edwards, and Edwards paid him for it.

At the close of the plaintiff's case, Mr. Shaw opened the defendants' case. He said his clients would tell the jury that from the very inception of the building scheme they told plaintiff that they were not in any way to be responsible for his fees. Defendants told plaintiff that if he would like to go into the business it would be at his own risk, and that he would only be able to get his fees out of the money supplied for financing the scheme.

Mr. W. M. Edwards, one of the defendants, was called, and, examined, said he went to Eastbourne with the plaintiff one Saturday, and saw the first site. He never suggested that he owned that site. He told plaintiff that he would go and see if the site were available. It was understood that plaintiff would act as architect, and that it was to be a joint speculation. Witness thought that he could get the scheme financed, and plaintiff agreed to act as architect on those terms. Nothing was said by the plaintiff about his being paid commission. It was agreed by the plaintiff that the plans for the first site should be dropped, and nothing was said by the plaintiff about remuneration. When he gave the plaintiff 25*l.* he got no receipt. Nothing was said about the terms plaintiff was preparing the second lot of plans on. Plaintiff understood that it was a joint speculation, and that he was to be paid if it was financed. He gave the plaintiff 25*l.* because he said he was very hard up. The scheme was not financed, and therefore, he said, the plaintiff was not entitled to any payment.

Cross-examined,

The agreement that the plaintiff was to have a joint speculation in the scheme, and to be paid if the scheme was financed, was made in the plaintiff's office. It was concurred in by the defendant Wallace. Both schemes were abandoned because they were not practicable, and not because they had no funds. It was found that they would not be profitable schemes.

Mr. Wm. Alfred Wallace also gave evidence generally corroborating that of the last witness.

In the result the jury, after deliberating for one hour and forty minutes, were unable to agree on a verdict, and were accordingly discharged.

ACTION BY BUILDERS.

THE case of Bywaters & Sons *v.* Carnick & Co. and Another came before Mr. Justice Bigham, sitting without a jury in the King's Bench Division on the 15th inst.

Mr. Hudson appeared for the plaintiffs and Mr. Morton Smith for the defendants.

Mr. Hudson said this was a claim by the plaintiffs for 360*l.*, which the defendants had deducted from the balance due to them for certain building work. It was mentioned in some of the letters that this amount was a bonus, but the effect of it was that it was really a penalty. The answer made by the defendants was that the plaintiffs did not complete to time, and to that the plaintiffs replied that the defendants never gave them possession of the site to enable them to do the work, and there were numerous extras and alterations. The contract was partly verbal and partly in writing.

His lordship asked if there was any provision in the contract for penalties.

Mr. Hudson replied in the negative. He said the plaintiffs tendered for the work, the pulling down and re-erection of certain premises in Glasshouse-street, W., and their tender was for 12,395*l.* The time for the completion of the work was thirty-six weeks. The tender was accepted on February 4, 1903, and the time was to run from that date. Plaintiffs also offered to do the work in twenty-six weeks if they had an additional 1,000*l.* An interview took place between plaintiffs and Mr. Robinson, defendants' architect, and then it was arranged that the ground floor and basement should be completed in nine weeks. That was part of the contract, and the plaintiffs were to have the 360*l.* claimed if it were completed within that period. The work, it was agreed, was completed on May 16. The whole dispute arose as to the date of the commencement of the work. Plaintiffs said they started on February 11, but that then they were stopped owing to a party wall dispute, and his clients said the award in the dispute was not obtained with proper diligence. The result was that it was not until March 16 that they really started the work. His contention was that the 360*l.* was added to the contract price, and therefore the defendants were liable to pay it. Having been prevented from completing by the specified date by extras and not getting possession of the site, he contended that his clients were entitled to the amount claimed.

Mr. Morton Smith said his contention was that included in the plaintiffs' contract was the time expended in pulling down the building and party wall and the erection of certain screens.

Mr. Hudson said his case was that the plaintiffs were stopped in their work from a date in February to early in March, and that this time must be deducted from the contract time.

Mr. Morton Smith admitted that the party wall could not be touched until March 3, but his contention was that there was plenty of work which the plaintiffs could have got on with whilst waiting for the party wall award.

After hearing evidence, his lordship, in giving judgment, said he thought he must find for the plaintiffs. The plaintiffs promised that they would deliver up possession of the basement and ground floor of the premises in question within nine weeks from the date of the commencement of the work, which meant from the date of the commencement of the contract work, and defendants agreed that in consideration of that promise and the performance of it they would pay the plaintiffs a bonus of 360*l.* The work, it had been agreed, was not completed within nine weeks. The only question he had to determine was to whom was this circumstance to be attributed. To his mind the defendants, by their action in not getting the party wall award, had prevented the plaintiffs from earning this money. He also thought that additional work had been ordered by the defendants during the progress of the work in the basement and on the ground floor, and this work delayed the plaintiffs in the execution of this work, and delayed them in executing the work required of them within the nine weeks. It was the defendants' acts and the defendants' fault that the work was not completed within the contract time. He accordingly gave judgment for the plaintiffs for 360*l.* and costs.

CONTRACTOR'S ACTION AGAINST DISTRICT COUNCIL.

THE case of Hudson *v.* the Malling Rural District Council came before the Court of Appeal, consisting of the Master of the Rolls and Lord Justice Romer, on the 13th inst., on the appeal of the defendants from an order of the Master, which was confirmed by Mr. Justice A. T. Lawrance in Chambers.

Mr. Hohler appeared for the appellants, and Mr. Daldy for the respondent.

Mr. Hohler, in opening the case, said the short point for decision was whether or not the plaintiff could take a sum of money which the defendants had paid into Court, and still proceed with the action. The action was brought in these circumstances. The defendants were constructing certain sewage works at Malling, in Kent, and the original contractor having failed to carry out the work, the present plaintiff took over the contract and completed it. There was in the contract the usual clause that the engineer should be the arbitrator, grant certificates, and that the whole matter should be the subject of his award. The defendant's case was that the arbitrator made an award and awarded the sum of 2,112*l.* 12*s.* 11*d.* as being due to the plaintiff. The plaintiff claimed 4,612*l.* 19*s.*, and brought the present action to recover that amount. In the statement of claim the plaintiff pleaded the contract, and set out the terms of it. He also alleged that he had completed the works, and then gave particulars of the sums he claimed in respect of the work he had executed, amounting in all, after giving credit for certain sums paid by the defendants on account, to the sum of 4,612*l.* 19*s.* By the defence the defendants denied that they were indebted to the plaintiff in the sum of 4,612*l.* 19*s.* They said it was a term of the contract that the plaintiff should receive payment on the certificate of the engineer, the estimated value of the work being calculated by the engineer according to the schedule of prices. Defendants further said that it was a term of the contract that all disputes or differences should be referred to the engineer, and that his decision should be final and binding on the parties. The engineer gave the certificates from time to time, and, the dispute having arisen, the engineer awarded that the sum of 2,112*l.* 12*s.* 11*d.* only was due to the plaintiff. Defendants further pleaded that this sum was tendered to the plaintiff in satisfaction, and they paid that sum into Court. The learned counsel said the short point was whether the plaintiff could take out the money paid into Court and still proceed with the action. He submitted that he could only take the money out by taking it in satisfaction of his claim. The Master and the learned Judge ordered that of the sum paid into Court 2,000*l.* should be paid out to the plaintiff, the balance being retained to answer the defendant's costs of the action if they were successful.

Mr. Daldy having, on behalf of the plaintiff, supported the order of the learned Judge, was asked by Lord Justice Romer if the plaintiff intended to impeach the award.

Mr. Daldy said that the plaintiff wanted to have the question now decided as to whether he was, notwithstanding that he had taken the money paid into Court, entitled to go on with the action. The plaintiff was certainly going to impeach the award.

Lord Justice Romer: That being so, you cannot possibly impeach the award and take the money defendants have paid under it.

The Master of the Rolls: I think you will have a difficulty in disputing the award if you take the money out of Court.

Mr. Daldy said the plaintiff wanted to dispute the fact that the award was binding.

In the result it was arranged that the plaintiff should pay back into Court the sum he had taken out, and that the costs of this appeal should be made costs in the cause.

POINT UNDER THE METROPOLIS OPEN SPACES ACTS.

THE case of the Mayor and Corporation of Paddington *v.* the Attorney-General came last week before the House of Lords, consisting of the Lord Chancellor and Lords Robertson and Lindley, on the appeal of the Mayor and Corporation of Paddington from a judgment of the Court of Appeal, dated July 25, 1903 (reported in the *Builder* of August 1, 1903), whereby a judgment of Mr. Justice Buckley, in the Chancery Division, was varied.

The action, as originally constituted, was brought by a Mr. Thomas Boyce (since deceased) against the present appellants, the Borough of Paddington and the Rev. Walter Abbott, the Vicar of Paddington (also deceased), and by the judgment of the Court of Appeal the appellants and the Vicar were perpetually restrained from using the disused burial-ground of St. Mary's, Paddington, for any purposes other than the purposes pointed out in their behalf by the Metropolitan Open Spaces Acts, 1877, 1881, and 1887, and the Disused Burial-Grounds Act, 1884, and from using the ground in question for the purpose of erecting thereon any building or screen so as to prevent the access of light coming over the ground to the windows of Mr. Boyce's premises. The short facts of the case were as follows:—In September, 1892, Mr. Boyce became the leaseholder for ninety-eight years of certain land and premises on the north-east of the churchyard. After the submission by and approval of plans by the Borough Council and the London County Council, Mr. Boyce erected a block of flats known as St. Mary's Mansions upon the land. These flats were lighted on the south-west by windows overlooking the churchyard. In October, 1897, the Vestry approved of a plan of gates and railings and the boundary wall proposed to be erected on the south-west boundary of his land. Difficulties arose with regard to the demolition of a boundary wall and the displacement of tomb-stones. Mr. Boyce had made an opening in the boundary wall, contemplating that there should be a gateway and entrance into the churchyard, but he afterwards bricked it up, and refused to re-open it until his claims were met. In January, 1901, the Corporation passed a resolution empowering their surveyor to erect a screen in front of the buildings belonging to Mr. Boyce facing the churchyard unless Mr. Boyce entered into an agreement to open the gateway originally formed in the wall of the churchyard. Mr. Boyce then brought the present action, claiming *inter alia* to restrain the erection of the screen. Mr. Abbott having died, his successor, the Rev. Marcus Rainsford, was made a party, and the executors of Mr. Boyce were substituted as respondents. The Attorney-General was also added as plaintiff at the relation of Mr. Boyce. The only question before the House of Lords was whether the appellants were entitled to erect the screen, the respondents' contention being that such erection, being a building, was prohibited by section 5 of the Metropolitan Spaces Act, 1881, and section 3 of the Disused Burial-Grounds Act, 1884. Mr. Justice Buckley decided the case in favour of the Borough Council and the Vicar, but his decision was reversed by the Court of Appeal. Hence the present appeal.

Mr. Haldane, K.C., Mr. Henry Terrell, K.C., and Mr. Nash and Mr. Barlow appeared for the appellants; and Mr. Astbury, K.C., and Mr. Mark Romer for the respondents.

Their lordships allowed the appeal, holding that there was no evidence that the appellants intended to erect a building, the Lord Chancellor stating that he was not prepared to say that any screen would be a building. It seemed to him that the public body was doing what every proprietor could do—viz., preventing the acquisition of adverse rights by adjoining owners.

ACTION AGAINST THE ASSOCIATION OF OPERATIVE PLASTERERS.

THE case of Smithies (trading as C. Smithies & Son) *v.* the National Association of Operative Plasterers and others came before the Court of Appeal, consisting of the Master of the Rolls and Lord Justice Romer, on the 11th inst., on the appeal of the defendant Association from an order of Mr. Justice Bucknill in Chambers.

Mr. S. T. Evans, K.C., M.P., in opening the case, said that the appeal was brought by the leave of Mr. Justice Bucknill, who had ordered discovery of documents in the action. The point raised was of great importance—viz., whether or not in an action of this kind, involving criminal charges, discovery of documents could be ordered, and whether in this particular case discovery ought to be ordered. The Master and the Judge, after long consideration, made the order, and invited an appeal to this court on the question. The action was brought by the plaintiff against the Association, its trustees and officials, for damages for conspiring to induce and persuade certain workmen not to fulfil their contracts with the plaintiff, and not to enter into fresh contracts with him. The points for discussion were whether in an action of this kind, where a claim was made for damages for what, if established, would be an indictable offence, any discovery of documents could be made at all since the Judicature Act, and, if discovery could be ordered, whether in this case it ought to be ordered. He sumitted that discovery could not be ordered in such a case.

Without calling upon counsel for the respondent their lordships held that on the authority of the decision in the case of Stokes *v.* the Grosvenor Hotel Company discovery was properly ordered and dismissed the appeal.

Mr. Evans said that defendants would take the case to the House of Lords.

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

24,263 of 1904.—P. STEVENS: *Parquetry.*

This relates to a method of applying parquetry, veneer parquetry, and panels on plaster, and is characterised by the interposition between the parquetry and the plaster of an insulating material, such as oakum or other felt, its faces intended to receive the plaster being roughened by gravel or the like, being caused to strongly adhere thereto, the other face being intended for the reception of the parquetry which is cemented thereto in any convenient manner.

27,805 of 1904.—G. HIGGS: *Domestic Fire-grates, Fireplaces, and Stoves.*

This relates to a bottom for domestic fire-grates, fireplaces, and stoves, and consists of a fixed main frame and a grid or barred frame which is suspended by jointed links from the said main frame, and is capable of being oscillated or moved in a horizontal plane.

28,420 of 1904.—J. D. BENNET: *Folding Desks for School and other use.*

This relates to a folding desk, whose top is fitted to swing on pivoted brackets, on the end standards, so that it may rest in the usual sloping position, and consists in being tilted up to approximately vertical position or be supported in a horizontal position by means of swinging bracket supports.

28,427 of 1904.—J. S. PULLAN, W. H. MANN: *Machines for Moulding Earthenware Pipes.*

This relates to a pipe moulding machine, and consists in providing a bearing for the lower end of the screw shaft on the top of the carrying stud of the internal die.

2,605 of 1905.—PILKINGTON'S TILE AND POTTERY CO., LTD., and J. BURTON: *Manufacture of Glazed Tiles.*

This relates to a tile constructed with an indentation or indentations, projection or projections on one or more edges, for the purpose of support during glost firing.

4,418 of 1905.—W. MURRAY: *Combined Hot and Cold Water Fitting for Baths, Lavatories, and the like.*

This relates to a hot and cold water fitting for baths, lavatories, and the like, and is characterised by two screw down valves, whose spindles are geared together in such a manner that by turning one of the spindles a certain distance the cold-water valve can be opened without opening the hot-water valve, so as to give a cold supply; and then, by turning the spindle a further distance, the hot-water valve can be opened also, so as to give a tepid supply; and again, by turning the spindle still further, the hot-water valve can be fully opened, whilst the cold-water valve can be closed, so as to give a hot supply.

6,180 of 1905.—W. S. WHITMORE: *Hot-water Apparatus for Heating Conservatories, and the like.*

This relates to a hot-water heating apparatus, and consists in the combination of an inner inclined pipe, an outer pipe closed at its ends, a helical endless band upon the inner pipe, a space between the inside of the outer pipe and the outer edge of the helical band, a pipe from the upper end of the inner pipe to a chimney, a chamber communicating with the inner end of the pipe, and a heating device.

6,248 of 1905.—H. S. MOORWOOD and J. M. MOORWOOD: *Construction and Combination of Washing Boilers with Kitchen Ranges.*

This relates to the combination with a kitchen range of ordinary construction fixed in one room, of an independent water boiler, with a fireplace and flue located in an adjoining room at the back of the said range, being accessible only from that room, and having a horizontal fuel passage between the two fireplaces.

7,887 of 1905.—A. BRANCART and E. MICHOTTE: *Tiles for Lining Purposes.*

This relates to a tile for lining purposes completely vitrified, and consists in having on its adhering face, catches or spurs forming part of the tile itself, and on the other side the lustre of the vitrified material fully preserved.

8,740 of 1905.—T. H. JORDAN: *Combined Door Check and Closer and Pivot.*

This relates to a combined door check, closer, and pivot, having a spring box mounted to turn, a check within the casing carrying the pivot spindle and connexions between the box, check, and spindle, the construction comprising a pitman connected to the rotatable spring box, the connexion normally resting near a dead centre, whereby greater pressure is required to start the turning movement of the box than is required to continue the said movement.

11,593 of 1905.—W. BERRYMAN: *Pipe Coupling.*

This relates to a flexible coupling for pipes or metal tubing, and comprises a sleeve secured on one pipe end, a washer of india-rubber or the like, interposed between the second pipe end, and an internal shoulder sleeve, a second similar washer encircling the second pipe a short distance from its end, and means for compressing the washer between the second pipe and the coupling sleeve.

14,131 of 1905.—R. HADDAN (Aktiengesellschaft Industrie für Holzverwertung): *Construction of Sound-proof Telephone Cabinets and other Chambers.*

This relates to a sound-proof telephone cabinet or other chamber, provided with hollow, preferably curved, wooden walls, filled with suitable sound insulating material, such as compressed cotton-wool, asbestos wool, or the like, and consists in the arrangement by which a settling of the said sound insulating material is prevented by means of suitable rods or pins inserted into the walls in a systematic manner, in order to hold the wool in position.

16,213 of 1905.—H. BROWN: *Window Sash Fittings.*

This relates to window sash fittings in which a flanged plate secured on the bottom swinging sash engages the flange of a sliding plate by which the sash counterweight cord is attached, and consists in the combination with said sliding plate of a hand actuated sliding locking bolt adapted to engage a catch plate under the batten rod.

16,851 of 1905.—C. H. MUCKENHIRN: *Water-closets and Seats therefor.*

This relates to water-closets and seats therefor, and consists in arranging the seat so as to have an inclination from front to back, and in providing the seat towards the rear with the concave surface.

18,304 of 1905.—A. MORALT: *Closet Seats.*

This relates to a closet seat composed of middle and side pieces, a metal ring let into each part of the closet seat where the said pieces join, the said ring securely connecting the said pieces.

22,617 of 1904.—J. J. BURGESS: *A Machine to Break up Roads, or Earth, or Ore, or other Metals or Substances.*

This relates to a machine to break up roads, or earth, or ore, or other metals or substances, and consists of a wheel with rows of cams attached thereto, actuating sets or a number of blades or frames, for the purpose of picking, digging, or breaking, the machine to work and travel at the same time and to work the reverse way.

24,381 of 1904.—H. RIGBY: *Metal Plates for use in the Construction of Floors, Roofs, and the like.*

This relates to plates of curved or bent form for the construction of floors, roofs, and the like, and consists in forming the plate with transverse corrugations to increase the transverse rigidity.

26,632 of 1904.—W. H. HOYLE AND T. BARKER: *Ventilating of Mills, Workshops, and other Buildings, and in Apparatus for such Purposes.*

This relates to a method of ventilating spinning and other mills or workshops, by drawing the air or a portion of the air at a low velocity through a greatly extended collecting area, which is a filtering area and is suitably housed or disposed in a room, the air being drawn through the extended filtering area and discharged by a fan or equivalent into the mill.

27,982 of 1904.—L. N. S. PASMORE: *Pavements.*

This relates to a street or other pavement having a perforated top, supports for such perforated top, and a space or spaces beneath such perforated top.

1,879 of 1905.—W. H. LUTHER: *Roofing Skylight Windows, Side Lights, Glass Frames, and the like.*

This relates to forming skylight windows and side lights out of corrugated metal sheets, and consists of the necessary frame work being formed out of the corrugated sheets themselves, instead of a separate frame being riveted or attached to a hole cut in the sheet, and combining with same a lead "flashing," or apron, to secure and make weather-tight the glass without the use of putty.

18,201 of 1905.—H. HELBIG: *Staircases for Theatres, Circuses, and other Public Buildings.*

This relates to a staircase arrangement for theatres, circuses, and other public buildings, in which outside the building one or more staircases is or are provided, to which lead exits from the various rows of seats and which increase in width towards the bottom.

19,693 of 1905.—E. LINES: *Bricks for Use in the Construction of the Walls of Bacteria Beds.*

This relates to a brick having in one of its larger faces eight equi-distant circular recesses, and on the reverse face four cylindrical projections of a smaller diameter than the said recesses and axially in line with those of the said recesses which are nearest the ends of the brick.

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

November 7.—By G. P. PRICE & J. STRAKER (at Abergavenny).

Clodock, Hereford.—"Tanhouse Farm," 79 a. 2 r. 25 p., f., y.r. 75*l.*	£2,200
"Trelandon Farm," 156 a. 3 r. 37 p., f. y.r. 100*l.*	2,175

November 13.—By BLAKE & CARPENTER

Putney.—22 and 23, Stratford-gr., u.t. 44 yrs., g.r. 6*l.*, e.r. 60*l.*	500
Chalk Farm.—1 and 2, Kirkwood-rd., u.t. 50½ yrs., g.r. 13*l.*, y.r. 80*l.*	670

By DUNCAN & KIMPTON.

Finsbury Park.—14, Beaulieu Villas, u.t. 51 yrs., g.r. 14*l.*, y.r. 100*l.*	850

By HAWES & CO.

Wimbledon.—29, 31, and 33, Hartfield-rd. (s), f., y.r. 130*l.*	2,005

By JENKINS, SON, & CO.

Rotherhithe.—2, Lower-rd. (s), u.t. 59½ yrs., g.r. 5*l.* 10s., y.r 35*l.*	505
4, 6, and 8, St. Mary Church-st., u.t. 59½ yrs., g.r. 13*l.*, w.r. 122*l.* 4s.	900
Brockley.—159, Brockley-rd., u.t. 59 yrs., g.r. 10*l.*, p.	305

November 14.—By BISLEY & SONS.

New Cross.—58, Reaston-st., u.t. 70 yrs., g.r. 5*l.*, w.r. 36*l.* 8s.	345
Deptford.—5, Liardet-gr., u.t. 52 yrs., g.r. 4*l.* 15s., w.r. 28*l.* 12s.	215
Bermondsey.—413, Southwark Park-rd. (s), f., y.r. 40*l.*	530
106a, Vienna-rd. (workshop), f., e.r. 18*l.* 4s.	140
Rotherhithe.—St. Mary Church-st, "Longley's Timber Yard," area 7,500 ft., l., y.r., etc., 73*l.* 2s. 8d.	755

By MONTAGU HOLMES & SONS.

Battersea.—284 and 296, Battersea Park-rd., (s), u.t. 71½ yrs., g.r. 24*l.*, y.r. 180*l.*	2,825

By KEMBLEYS'.

Romford, Essex.—Rush Green, The "Cooper's Arms," b-h., with Goodwill; also Three Cottages and two blocks of land adjoining, f., p.	2,350

By ROGERS, CHAPMAN, & THOMAS.

Pimlico.—64, Warwick-st., u.t. 28 yrs., g.r. 8*l.* 10s., y.r. 70*l.*	550

By FREDK. WARMAN.

Islington.—13, College-st., u.t. 10½ yrs. g.r. 7*l.* 10s., y.r. 45*l.*	125
Crouch End.—45, Glaslyn-rd., u.t. 76 yrs., g.r. 8*l.*, e.r. 45*l.*	405
Hornsey.—26, Malvern-rd., u.t. 72½ yrs., g.r. 6*l.*, e.r. 38*l.*	295
Holloway.—93 and 95, Cornwallis-rd., u.t. 49 yrs., g.r. 8*l.*, e.r. 76*l.*	500
Uxbridge, Middx.—Beckett-ter., *f.*, g.r. 48*l.*, reversion in 74 yrs.	1,000
Surbiton, Surrey.—Portsmouth-rd., "Cleaveland House," u.t. 94 yrs., g.r. 14*l.* 5s. 8d., e.r. 85*l.*	650

November 15.—By PERCY H. CLARKE.

Walthamstow.—41, Copeland-rd., u.t. 74 yrs., g.r. 5*l.*, w.r. 31*l.* 4s.	150

By H. DONALDSON & SONS.

Stoke Newington.—71, Spenser-rd., u.t. 30½ yrs., g.r. 4*l.* 14s. 6d., w.r. 44*l.* 4s.	280

By HAROLD GRIFFIN.

Battersea.—75, Mysore-rd., u.t. 84 yrs., g.r. 7*l.* 7s., p. £370

By WM. GROGAN & BOYD.

Piccadilly.—3, Berkeley-st., u.t. 59 yrs., g.r. 100*l.*, increasing to 150*l.*, p. 3,500

By HOLCOMBE, BETTS, & WEST.

Lambeth.—44, Waterloo-rd., u.t. 17½ yrs., g.r. 9*l.*, y.r. 60*l.* 450

South Kensington.—17, Pelham-pl., u.t. 13 yrs., g.r. 5*l.*, y.r. 75*l.* 400

By SALTER, REX, & Co.

Camden Town.—High-st., f.g. rents 36*l.*, reversion in 16¼ yrs. 4,000

By A. W. TAYLOR & Co.

Wandsworth.—West Hill, a freehold site, area 5,598 ft. 1,110

West Hill, a freehold corner plot 300

By DEBENHAM, TEWSON, & Co. with MATTHEWS, MATTHEWS, & Co. (at Winchester House).

Woolwich, Kent.—20 to 40 (even), New-rd. (site), area 9,690 ft., f. 1,800

20, New-rd. (unfinished shop), f., p. 550

New-rd., f.g.r. 40*l.*, reversion in 54¼ yrs. 1,075

New-rd., "Duke of York" b.h., f., rental 45*l.*, reversion in 8¼ yrs. 2,350

Cross-st., f.g.r. 7*l.*, reversion in 17¼ yrs. 360

New-rd., f.g.r. 30*l.*, reversion in 73 yrs. 1,800

New-rd., f.g.r. 12*l.* 18s., reversion in 2¼ yrs. 3,400

51 to 57 (odd), New-rd. (s), area 7,984 ft., f., y.r. 123*l.* 2,125

Burrage-rd., f.g. rents 41*l.* 7s., reversion in 13½ to 25 yrs. 3,010

Church-ter., f.g.r. 9*l.*, reversion in 17¼ yrs. 580

Maxey-rd., f.g. rents 27*l.* 18s., reversion in 18½ to 24½ yrs. 1,590

Raglan-rd., f.g. rents 28*l.* 15s., reversion in 14½ yrs. 1,930

Burrage-rd., f.g. rents 76*l.* 12s., reversion in 21 and 26½ yrs. 3,600

Maxey-rd., f.g. rents 96*l.* 9s., reversion in 19½ to 44½ yrs. 4,540

Maxey-rd., "Percy Arms" p.h., f.g.r. 16*l.* 6s., reversion in 26½ yrs. 1,600

Maxey-rd., f.g.r. 28*l.* 6s., reversion in 19 to 26½ yrs. 1,475

Coupland-ter., f.g.r. 20*l.*, reversion in 27½ yrs. 670

Lee-st., f.g. rents 80*l.* 13s., reversion in 26½ to 55 yrs. 2,340

Hudson-rd., f.g. rents 53*l.* 6s., reversion in 20½ to 35½ yrs. 2,640

Raglan-rd., f.g.r. 29*l.* 5s., reversion in 19½ to 20 yrs. 1,300

Coupland-ter., f.g. rents 68*l.* 4s., reversion in 19½ to 27½ yrs. 3,140

Raglan-rd., f.g. rents 80*l.* 5s., reversion in 15 to 18½ yrs. 2,005

Maxey-rd., f.g. rents 29*l.* 15s., reversion in 18½ to 18½ yrs. 1,770

Hudson-rd., f.g. rents 113*l.* 17s., reversion in 19½ to 41½ yrs. 4,830

Vicarage-rd., "Bramblebury Arms" b-h., f., rental 60*l.*, reversion in 15½ yrs. 1,500

Vicarage-rd., f.g. rents 46*l.* 10s., reversion in 20½ to 26 yrs. 1,870

Raglan-rd, f.g.r. 25*l.* 16s., reversion in 20½ to 27½ yrs. 1,050

Hudson-rd., etc., f.g. rents 48*l.* 5s. 3d., reversion in 20½ to 43 yrs. 1,660

Lee st., f.g. rents, 34*l.* 7s., reversion in 21 to 39½ yrs. 1,350

St. Margaret's-ter., f.g. rents 38*l.* reversion in 40½ yrs. 1,310

Burrage-rd., f.g. rents 95*l.* 12s. 8d., reversion in 17 to 28½ yrs. 4,330

Plumstead Common-rd., f.g.r. 16*l.* 13s. 4d., reversion in 55 yrs. 500

By P. WONTNER SMITH (at Mitcham).

Mitcham, Surrey.—Church-rd., "Box Cottage" and plot of land, f., w.r. 26*l.* 350

November 16.—By BELLAMY & Co.

Poplar.—34, Lion-st., f., w.r. 23*l.* 8s. 200

By J. G. DEAN & Co.

Balham.—50, Fernlea-rd., u.t. 59½ yrs., g.r. 7*l.* 7s., w.r. 53*l.* 6s. 250

By HIGGINS & SON.

St. John's Wood.—14, Blenheim-ter., u.t. 38 yrs., g.r. 12*l.* 12s., y.r. 60*l.* 320

By GEO. JOSLIN.

Westbourne Park.—19, Walterton-rd., u.t. 57 yrs., g.r. 10*l.*, e.r. 50*l.* 565

21, Barnsdale-rd., u.t. 57 yrs., g.r. 8*l.*, y.r. 53*l.* 500

25, Southam-st., u.t. 60 yrs., g.r. 7*l.* 10s., w.r. 67*l.* 12s. 305

By C. C. & T. MOORE.

Forest Gate.—112, Claremont-rd., u.t. 83 yrs., g.r. 6*l.*, y.r. 34*l.* 365

By STIMSON & SONS.

Hackney Wick.—Wick-rd., The "White Lion" p.h., etc., f.g.r. 110*l.*, reversion in 51 yrs. .. 2,420

Crouch Hill.—No. 45, u.t. 69 yrs., g.r. 7*l.* 10s., e.r. 45*l.* 425

Battersea.—86 and 88, Orbel-st., u.t. 72 yrs., g.r. 13*l.*, w.r. 89*l.* 14s. 600

21, 23, and 29, Henning-st., u.t. 72 yrs., g.r. 18*l.* 10s., w.r. 139*l.* 2s. 950

Clapham.—2, Carlton-mansions, u.t. 69½ yrs., g.r. 10*l.*, y.r. 75*l.* 600

Camberwell.—15, Rust-sq., u.t. 52 yrs., g.r. 6*l.* 6s., w.r. 46*l.* 16s. 250

Peckham.—365, Queen's-rd., u.t. 36 yrs., g.r. 6*l.*, e.r. 50*l.* 295

New Cross.—104, Pepys-rd., u.t. 60½ yrs., g.r. 6*l.* 7s., y.r. 38*l.* 460

Mitcham, Surrey.—7 to 12, Portland-rd., f., w.r. 117*l.* 1,000

1a to 6a, Seaton-rd., f., w.r. 126*l.* 2s. 1,000

Morden, Surrey.—7, 8, and 9, Stoneleigh-cottages, f., w.r. 70*l.* 4s. 710

By H. J. BLISS & SONS.

Leytonstone.—47, Poppleton-rd., f., y.r. 36*l.* .. 500

Hackney.—27, Aspland-gr., u.t. 50 yrs., g.r. 4*l.* 15s., w.r. 41*l.* 12s. 265

Bethnal Green.—10 to 20 (even), Usk-st., f., w.r. 128*l.* 14s. 1,340

Hoxton.—Nicholas-st., f.g.r. 38*l.*, reversion in 3 yrs. 3,130

Hackney.—26 to 31, and 59 to 63, Palace-rd., u.t. 50 yrs., g.r. 33*l.* 18s., w.r. 250*l.* 18s. 1,375

By ROOTES & WINTLE (at Ross).

Ruardean, Glos.—Knights Hill Farm House and 7 a. 3 r. 1 p., f. £385

November 17.—By ELLIS & SON.

Barnsbury.—88 and 90, Richmond-rd. (s), area nearly 4,500 ft., f., y.r. 48*l.* 810

By GILBERT & HOW.

Finsbury Park.—321, Green-lanes, u.t. 51 yrs., g.r. 12*l.* 12s., p. 750

Dalston.—16 and 17, Laurel-st., u.t. 17 yrs., g.r. 12*l.*, y.r. 56*l.* 255

Holloway.—25, Williamson-st., u.t. 40 yrs., g.r. 5*l.*, w.r. 41*l.* 12s. 300

25 and 27, Rupert-rd., u.t. 60 yrs., g.r. 10*l.*, w.r. 88*l.* 8s. 500

Dalston.—11 and 13, Shrubland-gr., u.t. 12½ yrs., g.r. 10*l.*, y.r. 58*l.* 225

54, Malvern-rd., u.t. 40½ yrs., g.r. 6*l.* 5s., y.r. 38*l.* 345

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; g.r. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. foa shops; ct. for court.

MEETINGS.

SATURDAY, NOVEMBER 25.

Royal Sanitary Institute.—A provincial sessional meeting in the Council Chamber, Town Hall, Hastings. A discussion will be opened on "Water Filtration—The Health Aspect," by Mr. A. Scariyn Wilson, D.P.H., M.O.H.; "Pressure Filters," by Mr. Philip H. Palmer, M.Inst.C.E.; and "The Chemical Aspect," by Mr. H. F. Cheshire, B.Sc., F.I.C.

MONDAY, NOVEMBER 27.

London Institution.—Sir Charles Eliot, K.C.M.G., on "The Upper Nile," illustrated. 5 p.m.

Society of Arts (Cantor Lectures).—Dr. J. A. Fleming, F.R.S., on "The Measurement of High Frequency Currents and Electric Waves," I. 8 p.m.

Surveyors' Institution.—Discussion on Paper by Mr. J. D. Wallis, entitled "The Licensing Act, 1904: with Special Reference to the Questions of Compensation and Monopoly Value." 8 p.m.

TUESDAY, NOVEMBER 28.

Institution of Civil Engineers.—Further discussion on Mr. J. A. Saner's Paper on "Waterways in Great Britain." 8 p.m.

WEDNESDAY, NOVEMBER 29.

Edinburgh Architectural Association (Associates' Meeting).—Mr. T. Hadden on "Wrought-Iron Work"—a practical demonstration. 8 p.m.

Society of Arts.—Sir W. H. Preece, K.C.B., on "The British Association in South Africa." 8 p.m.

FRIDAY, DECEMBER 1.

Architectural Association.—Mr. E. F. Reynolds on "Turkish Architecture," illustrated with lantern views. 7.30 p.m.

Institution of Civil Engineers (Students' Meeting).—Mr. W. L. Jenkins on "An Installation for the Bacterial Treatment of Sewage at Neath." 8 p.m.

TERMS OF SUBSCRIPTION.

"THE BUILDER" (Published Weekly) is supplied DIRECT from the Office to residents in any part of the United Kingdom at the rate of 19s. per annum (52 numbers) PREPAID. To all parts of Europe, America, Australia, New Zealand, India, China, Ceylon, etc., 26s. per annum.

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PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£	s.	d.			
Hard Stocks	1	7	0	per 1000 alongside, in river.		
Rough Stocks and Grizzles	1	4	0	,,	,,	,,
Facing Stocks	2	0	0	,,	,,	,,
Shippers	2	0	0	,,	,,	,,
Flettons	1	5	6	,,	at railway depôt.	
Red Wire Cuts	1	11	0	,,	,,	,,
Best Fareham Red	3	12	0	,,	,,	,,
Best Red Pressed Ruabon Facing	5	0	0	,,	,,	,,
Best Blue Pressed Staffordshire	4	1	0	,,	,,	,,
Do. Bullnose	4	6	6	,,	,,	,,
Best Stourbridge Fire Bricks	3	15	6	,,	,,	,,
GLAZED BRICKS.						
Best White and Ivory Glazed Stretchers	12	0	0	,,	,,	,,
Headers	11	0	0	,,	,,	,,
Quoins, Bullnose, and Flats	16	0	0	,,	,,	,,
Double Stretchers	19	0	0	,,	,,	,,
Double Headers	16	0	0	,,	,,	,,
One Side and two Ends	19	0	0	,,	,,	,,
Two Sides and one End	20	0	0	,,	,,	,,
Splays, Chamferred, Squints	20	0	0	,,	,,	,,
Best Dipped Salt Glazed Stretchers, and Header	12	0	0	,,	,,	,,

BRICKS, &c. (*continued*).

GLAZED BRICKS—*Continued.*

	£	s.	d.			
Quoins, Bullnose, and Flats	14	0	0	per 1000 at railway depôt.		
Double Stretchers	15	0	0	,,	,,	,,
Double Headers	14	0	0	,,	,,	,,
One Side and two Ends	15	0	0	,,	,,	,,
Two Sides and one End	15	0	0	,,	,,	,,
Splays, Chamferred, Squints	14	0	0	,,	,,	,,
Second Quality White and Dipped Salt Glazed	2	0	0	,,	less than best.	

	s.	d.			
Thames and Pit Sand	6	9	per yard, delivered.		
Thames Ballast	5	3	,,	,,	
Best Portland Cement	26	0	per ton,	,,	
Best Ground Blue Lias Lime	19	0	,,	,,	

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly. dpt.

STONE.

	s.	d.			
BATH STONE—delivered on road waggons, Paddington Depôt	1	6½	per ft. cube.		
Do. do. delivered on road waggons, Nine Elms Depôt	1	8½	,,	,,	
PORTLAND STONE (20 ft. average)—					
Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	1	,,	,,	
White Basebed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	2½	,,	,,	

	s.	d.			
Ancaster in blocks	1	10	per ft. cube, deld. rly. depôt.		
Beer ,,	1	6	,,	,,	
Greenshill ,,	1	10	,,	,,	
Darley Dale in blocks	2	4	,,	,,	
Red Corsehill ,,	2	2	,,	,,	
Closeburn Red Freestone	2	0	,,	,,	
Red Mansfield ,,	2	4	,,	,,	
YORK STONE—*Robin Hood Quality.*					
Scappled random blocks	2	10	,,	,,	
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	3	per ft. super.,	,,	
6 in. rubbed two sides ditto, ditto	2	6	,,	,,	
3 in. sawn two sides slabs (random sizes)	0	11½	,,	,,	
2 in. to 2½ in. sawn one side slabs (random sizes)	0	7½	,,	,,	
1½ in. to 2 in. ditto, ditto	0	6	,,	,,	
HARD YORK—					
Scappled random blocks	3	0	per ft. cube,	,,	
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	8	per ft. super.,	,,	
6 in. rubbed two sides ditto	3	0	,,	,,	
3 in. sawn two sides slabs (random sizes)	1	2	,,	,,	
2 in. self-faced random flags	0	5	,,	,,	

	s.	d.			
Hopton Wood (Hard Bed) in blocks	2	0	per ft. cube, deld. rly. depôt.		
,, ,, ,, 6 in. sawn both sides landings	2	7	per ft. super. deld. rly. depôt.		
,, ,, ,, 3 in. sawn both sides random slabs	1	0	,,	,,	
,, ,, ,, 2 in. do.	0	8½	,,	,,	

SLATES.

In.	In.	£	s.	d.			
20×10	best blue Bangor	13	2	6	per 1000 of 1200 at r. d.		
20×12	,, ,,	13	17	6	,,	,,	
20×10	first quality ,,	13	0	0	,,	,,	
20×12	,, ,,	13	15	0	,,	,,	
16×8	,, ,,	7	5	0	,,	,,	
20×10	best blue Portmadoc	12	12	6	,,	,,	
16×8	,, ,,	6	12	6	,,	,,	
20×10	best Eureka unfading green	15	17	6	,,	,,	
20×12	,, ,,	18	7	6	,,	,,	
18×10	,, ,,	13	5	0	,,	,,	
16×8	,, ,,	10	5	0	,,	,,	
20×10	permanent green	11	12	6	,,	,,	
18×10	,, ,,	9	12	6	,,	,,	
16×8	,, ,,	6	12	6	,,	,,	

TILES.

	s.	d.			
Best plain red roofing tiles	42	0	per 1000 at rly. depôt.		
Hip and Valley tiles	3	7	per doz.	,,	
Best Broseley tiles	50	0	per 1000	,,	
Do. Ornamental tiles	52	6	,,	,,	
Hip and Valley tiles	4	0	per doz.	,,	
Best Ruabon red, brown, or brindled do. (Edwards)	57	6	per 1000	,,	
Do. Ornamental do.	60	0	,,	,,	
Hip tiles	4	0	per doz.	,,	
Valley tiles	3	0	,,	,,	
Best Red or Mottled Staffordshire do. (Peakes)	51	9	per 1000	,,	
Do. Ornamental do.	54	6	,,	,,	
Hip tiles	4	1	per doz.	,,	
Valley tiles	3	8	,,	,,	
Best "Rosemary" brand plain tiles	48	0	per 1000	,,	
Best Ornamental tiles	50	0	,,	,,	
Hip tiles	4	0	per doz.	,,	
Valley tiles	3	8	,,	,,	
Best "Hartshill" brand plain tiles, sand-faced	50	0	per 1000	,,	
Do. pressed	47	6	,,	,,	
Do. Ornamental do.	50	0	,,	,,	
Hip tiles	4	0	per doz.	,,	
Valley tiles	3	6	,,	,,	

PRICES CURRENT.—*Continued on page 574.*

Their lordships allowed the appeal, holding that there was no evidence that the appellants intended to erect a building, the Lord Chancellor stating that he was not prepared to say that any screen would be a building. It seemed to him that the public body was doing what every proprietor could do—viz., preventing the acquisition of adverse rights by adjoining owners.

ACTION AGAINST THE ASSOCIATION OF OPERATIVE PLASTERERS.

THE case of Smithies (trading as C. Smithies & Son) *v.* the National Association of Operative Plasterers and others came before the Court of Appeal, consisting of the Master of the Rolls and Lord Justice Romer, on the 11th inst., on the appeal of the defendant Association from an order of Mr. Justice Bucknill in Chambers.

Mr. S. T. Evans, K.C., M.P., in opening the case, said that the appeal was brought by the leave of Mr. Justice Bucknill, who had ordered discovery of documents in the action. The point raised was of great importance—viz., whether or not in an action of this kind, involving criminal charges, discovery of documents could be ordered, and whether in this particular case discovery ought to be ordered. The Master and the Judge, after long consideration, made the order, and invited an appeal to this court on the question. The action was brought by the plaintiff against the Association, its trustees and officials, for damages for conspiring to induce and persuade certain workmen not to fulfil their contracts with the plaintiff, and not to enter into fresh contracts with him. The points for discussion were whether in an action of this kind, where a claim was made for damages for what, if established, would be an indictable offence, any discovery of documents could be made at all since the Judicature Act, and, if discovery could be ordered, whether in this case it ought to be ordered. He sumitted that discovery could not be ordered in such a case.

Without calling upon counsel for the respondent their lordships held that on the authority of the decision in the case of Stokes *v.* the Grosvenor Hotel Company discovery was properly ordered and dismissed the appeal.

Mr. Evans said that defendants would take the case to the House of Lords.

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

24,263 of 1904.—P. STEVENS: *Parquetry.*

This relates to a method of applying parquetry, veneer parquetry, and panels on plaster, and is characterised by the interposition between the parquetry and the plaster of an insulating material, such as oakum or other felt, its faces intended to receive the plaster being roughened by gravel or the like, being caused to strongly adhere thereto, the other face being intended for the reception of the parquetry which is cemented thereto in any convenient manner.

27,805 of 1904.—G. HIGGS: *Domestic Fire-grates, Fireplaces, and Stoves.*

This relates to a bottom for domestic fire-grates, fireplaces, and stoves, and consists of a fixed main frame and a grid or barred frame which is suspended by jointed links from the said main frame, and is capable of being oscillated or moved in a horizontal plane.

28,420 of 1904.—J. D. BENNET: *Folding Desks for School and other use.*

This relates to a folding desk, whose top is fitted to swing on pivoted brackets, on the end standards, so that it may rest in the usual sloping position, and consists in being tilted up to approximately vertical position or be supported in a horizontal position by means of swinging bracket supports.

28,427 of 1904.—J. S. PULLAN, W. H. MANN: *Machines for Moulding Earthenware Pipes.*

This relates to a pipe moulding machine, and consists in providing a bearing for the lower end of the screw shaft on the top of the carrying stud of the internal die.

2,605 of 1905.—PILKINGTON'S TILE AND POTTERY CO., LTD., and J. BURTON: *Manufacture of Glazed Tiles.*

This relates to a tile constructed with an indentation or indentations, projection or projections on one or more edges, for the purpose of support during glost firing.

4,418 of 1905.—W. MURRAY: *Combined Hot and Cold Water Fitting for Baths, Lavatories, and the like.*

This relates to a hot and cold water fitting for baths, lavatories, and the like, and is characterised by two screw down valves, whose spindles are geared together in such a manner that by turning one of the spindles a certain distance the cold-water valve can be opened without opening the hot-water valve, so as to give a cold supply; and then, by turning the spindle a further distance, the hot-water valve can be opened also, so as to give a tepid supply; and again, by turning the spindle still further, the hot-water valve can be fully opened, whilst the cold-water valve can be closed, so as to give a hot supply.

6,180 of 1905.—W. S. WHITMORE: *Hot-water Apparatus for Heating Conservatories, and the like.*

This relates to a hot-water heating apparatus, and consists in the combination of an inner inclined pipe, an outer pipe closed at its ends, a helical endless band upon the inner pipe, a space between the inside of the outer pipe and the outer edge of the helical band, a pipe from the upper end of the inner pipe to a chimney, a chamber communicating with the inner end of the pipe, and a heating device.

6,248 of 1905.—H. S. MOORWOOD and J. M. MOORWOOD: *Construction and Combination of Washing Boilers with Kitchen Ranges.*

This relates to the combination with a kitchen range of ordinary construction fixed in one room, of an independent water boiler, with a fireplace and flue located in an adjoining room at the back of the said range, being accessible only from that room, and having a horizontal fuel passage between the two fireplaces.

7,887 of 1905.—A. BRANCART and E. MICHOTTE: *Tiles for Lining Purposes.*

This relates to a tile for lining purposes completely vitrified, and consists in having on its adhering face, catches or spurs forming part of the tile itself, and on the other side the lustre of the vitrified material fully preserved.

8,740 of 1905.—T. H. JORDAN: *Combined Door Check and Closer and Pivot.*

This relates to a combined door check, closer, and pivot, having a spring box mounted to turn, a check within the casing carrying the pivot spindle and connexions between the box, check, and spindle, the construction comprising a pitman connected to the rotatable spring box, the connexion normally resting near a dead centre, whereby greater pressure is required to start the turning movement of the box than is required to continue the said movement.

11,593 of 1905.—W. BERRYMAN: *Pipe Coupling.*

This relates to a flexible coupling for pipes or metal tubing, and comprises a sleeve secured on one pipe end, a washer of india-rubber or the like, interposed between the second pipe end, and an internal shoulder sleeve, a second similar washer encircling the second pipe a short distance from its end, and means for compressing the washer between the second pipe and the coupling sleeve.

14,131 of 1905.—R. HADDAN (Aktiengesellschaft Industrie für Holzverwertung): *Construction of Sound-proof Telephone Cabinets and other Chambers.*

This relates to a sound-proof telephone cabinet or other chamber, provided with hollow, preferably curved, wooden walls, filled with suitable sound insulating material, such as compressed cotton-wool, asbestos wool, or the like, and consists in the arrangement by which a settling of the said sound insulating material is prevented by means of suitable rods or pins inserted into the walls in a systematic manner, in order to hold the wool in position.

16,213 of 1905.—H. BROWN: *Window Sash Fittings.*

This relates to window sash fittings in which a flanged plate secured on the bottom swinging sash engages the flange of a sliding plate by which the sash counterweight cord is attached, and consists in the combination with said sliding plate of a hand actuated sliding locking bolt adapted to engage a catch plate under the batten rod.

16,851 of 1905.—C. H. MUCKENHIRN: *Water-closets and Seats therefor.*

This relates to water-closets and seats therefor, and consists in arranging the seat so as to have an inclination from front to back, and in providing the seat towards the rear with the concave surface.

18,304 of 1905.—A. MORALT: *Closet Seats.*

This relates to a closet seat composed of middle and side pieces, a metal ring let into each part of the closet seat where the said pieces join, the said ring securely connecting the said pieces.

22,617 of 1904.—J. J. BURGESS: *A Machine to Break up Roads, or Earth, or Ore, or other Metals or Substances.*

This relates to a machine to break up roads, or earth, or ore, or other metals or substances, and consists of a wheel with rows of cams attached thereto, actuating sets or a number of blades or frames, for the purpose of picking, digging, or breaking, the machine to work and travel at the same time and to work the reverse way.

24,381 of 1904.—H. RIGBY: *Metal Plates for use in the Construction of Floors, Roofs, and the like.*

This relates to plates of curved or bent form for the construction of floors, roofs, and the like, and consists in forming the plate with transverse corrugations to increase the transverse rigidity.

26,632 of 1904.—W. H. HOYLE AND T. BARKER: *Ventilating of Mills, Workshops, and other Buildings, and in Apparatus for such Purposes.*

This relates to a method of ventilating spinning and other mills or workshops, by drawing the air or a portion of the air at a low velocity through a greatly extended collecting area, which is a filtering area and is suitably housed or disposed in a room, the air being drawn through the extended filtering area and discharged by a fan or equivalent into the mill.

27,982 of 1904.—L. N. S. PASMORE: *Pavements.*

This relates to a street or other pavement having a perforated top, supports for such perforated top, and a space or spaces beneath such perforated top.

1,879 of 1905.—W. H. LUTHER: *Roofing Skylight Windows, Side Lights, Glass Frames, and the like.*

This relates to forming skylight windows and side lights out of corrugated metal sheets, and consists of the necessary frame work being formed out of the corrugated sheets themselves, instead of a separate frame being riveted or attached to a hole cut in the sheet, and combining with same a lead "flashing," or apron, to secure and make weather-tight the glass without the use of putty.

18,201 of 1905.—H. HELBIG: *Staircases for Theatres, Circuses, and other Public Buildings.*

This relates to a staircase arrangement for theatres, circuses, and other public buildings, in which outside the building one or more staircases is or are provided, to which lead exits from the various rows of seats and which increase in width towards the bottom.

19,693 of 1905.—E. LINES: *Bricks for Use in the Construction of the Walls of Bacteria Beds.*

This relates to a brick having in one of its larger faces eight equi-distant circular recesses, and on the reverse face four cylindrical projections of a smaller diameter than the said recesses and axially in line with those of the said recesses which are nearest the ends of the brick.

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

November 7.—By G. P. PRICE & J. STRAKER (at Abergavenny).

Clodock, Hereford.—"Tanhouse Farm," 79 a. 2 r. 25 p., f., y.r. 75*l.*	£2,200
"Trelandon Farm," 156 a. 3 r. 37 p., f. y.r. 100*l.*	2,175

November 13.—By BLAKE & CARPENTER.

Putney.—22 and 23, Stratford-gr., u.t. 44 yrs., g.r. 6*l.*, e.r. 60*l.*	500
Chalk Farm.—1 and 2, Kirkwood-rd., u.t. 50½ yrs., g.r. 13*l.*, y.r. 80*l.*	670

By DUNCAN & KIMPTON.

Finsbury Park.—14, Beaulieu Villas, u.t. 51 yrs., g.r. 14*l.*, y.r. 100*l.*	850

By HAWES & CO.

Wimbledon.—29, 31, and 33, Hartfield-rd. (s), f., y.r. 130*l.*	2,005

By JENKINS, SON, & CO.

Rotherhithe.—2, Lower-rd. (s), u.t. 59½ yrs., g.r. 5*l.* 10s., y.r 35*l.*	305
4, 6, and 8, St. Mary Church-st., u.t. 59½ yrs., g.r. 13*l.*, w.r. 122*l.* 4s.	900
Brockley.—159, Brockley-rd., u.t. 59 yrs., g.r. 10*l.*, p.	305

November 14.—By BISLEY & SONS.

New Cross.—58, Reaston-st., u.t. 70 yrs., g.r. 8*l.*, w.r. 36*l.* 8s.	345
Deptford.—5, Liardet-gr., u.t. 52 yrs., g.r. 4*l.* 15s., w.r. 28*l.* 12s.	215
Bermondsey.—413, Southwark Park-rd. (s), f., y.r. 40*l.*	530
106a, Vienna-rd. (workshop), f., e.r. 18*l.* 4s.	140
Rotherhithe.—St. Mary Church-st, "Longley's Timber Yard," area 7,500 ft., f., y.r., etc., 73*l.* 2s. 8d.	755

By MONTAGU HOLMES & SONS.

Battersea.—284 and 296, Battersea Park-rd., (s), u.t. 71½ yrs., g.r. 24*l.*, y.r. 180*l.*	2,825

By KEMSLEYS'.

Romford, Essex.—Rush Green, The "Cooper's Arms," b-h., with Goodwill; also Three Cottages and two blocks of land adjoining, f., p.	2,350

By ROGERS, CHAPMAN, & THOMAS.

Pimlico.—64, Warwick-st., u.t. 28 yrs., g.r. 8*l.* 10s., y.r. 70*l.*	550

By FREDK. WARMAN.

Islington.—13, College-st., u.t. 10½ yrs., g.r. 7*l.* 10s., y.r. 45*l.*	125
Crouch End.—45, Glaslyn-rd., u.t. 76 yrs., g.r. 8*l.*, e.r. 45*l.*	405
Hornsey.—26, Malvern-rd., u.t. 72½ yrs., g.r. 6*l.*, e.r. 28*l.*	295
Holloway.—93 and 95, Cornwallis-rd., u.t. 49 yrs., g.r. 8*l.*, e.r. 76*l.*	500
Uxbridge, Middx.—Beckett-ter., f., g.r. 48*l.*, reversion in 74 yrs.	1,000
Surbiton, Surrey.—Portsmouth-rd., "Cleveland House," u.t. 94 yrs., g.r. 14*l.* 5s. 8d., e.r. 85*l.*	650

November 15.—By PERCY H. CLARKE.

Walthamstow.—41, Copeland-rd., u.t. 74 yrs., g.r. 5*l.*, w.r. 31*l.* 4s.	150

By H. DONALDSON & SONS.

Stoke Newington.—71, Spenser-rd., u.t. 36½ yrs., g.r. 4*l.* 14s. 6d., w.r. 44*l.* 4s.	280

By HAROLD GRIFFIN.

Battersea.—75, Mysore-rd., u.t. 84 yrs., g.r. 7*l.* 7*s.*, p. £370

By WM. GROGAN & BOYD.

Piccadilly.—3, Berkeley-st., u.t. 59 yrs., g.r. 100*l.*, increasing to 150*l.*, p. 3,500

By HOLCOMBE, BETTS, & WEST.

Lambeth.—44, Waterloo-rd., u.t. 17½ yrs., g.r. 9*l.*, y.r. 60*l.* 450

South Kensington.—17, Pelham-pl., u.t. 13 yrs., g.r. 5*l.*, y.r. 75*l.* 400

By SALTER, REX, & CO.

Camden Town.—High-st., f.g. rents 36*l.*, reversion in 16½ yrs. 4,000

By A. W. TAYLOR & CO.

Wandsworth.—West Hill, a freehold site, area 5,598 ft. 1,110

West Hill, a freehold corner plot 300

By DEBENHAM, TEWSON, & CO. with MATTHEWS, MATTHEWS, & CO. (at Winchester House).

Woolwich, Kent.—20 to 40 (even), New-rd. (site), area 9,690 ft., f. 1,800

20, New-rd. (unfinished shop), f., p. 550

New-rd., f.g.r. 40*l.*, reversion in 54½ yrs. 1,075

New-rd., "Duke of York" b.h., f., rental 48*l.* reversion in 8½ yrs. 2,350

Cross-st., f.g.r. 7*l.*, reversion in 17½ yrs. 360

New-rd., f.g.r. 30*l.*, reversion in 73 yrs. 1,800

New-rd., f.g.r. 12*l.* 18*s.*, reversion in 2½ yrs. 3,400

51 to 57 (odd), New-rd. (s), area 7,984 ft., f., y.r. 123*l.* 2,125

Burrage-rd., f.g. rents 41*l.* 7*s.*, reversion in 13½ to 25 yrs. 3,010

Church-ter., f.g.r. 9*l.*, reversion in 17½ yrs. 580

Maxey-rd., f.g. rents 27*l.* 18*s.*, reversion in 18½ to 24½ yrs. 1,590

Raglan-rd., f.g. rents 28*l.* 15*s.*, reversion in 14½ yrs. 1,930

Burrage-rd., f.g. rents 76*l.* 12*s.*, reversion in 21 and 26½ yrs. 3,600

Maxey-rd., f.g. rents 96*l.* 9*s.*, reversion in 19½ to 44½ yrs. 4,540

Maxey-rd., "Percy Arms" p.h., f.g.r. 16*l.* 6*s.*, reversion in 26½ yrs. 1,000

Maxey-rd., f.g.r. 28*l.* 6*s.*, reversion in 19 to 26½ yrs. 1,475

Coupland-ter., f.g.r. 20*l.*, reversion in 27½ yrs. 670

Lee-st., f.g. rents 80*l.* 13*s.*, reversion in 26½ to 55 yrs. 2,340

Hudson-rd., f.g. rents 53*l.* 6*s.*, reversion in 20½ to 35½ yrs. 2,640

Raglan-rd., f.g.r. 29*l.* 5*s.*, reversion in 19½ to 20 yrs. 1,300

Coupland-ter., f.g. rents 68*l.* 4*s.*, reversion in 19½ to 27½ yrs. 3,140

Raglan-rd., f.g. rents 80*l.* 5*s.*, reversion in 15 to 18½ yrs. 2,005

Maxey-rd., f.g. rents 29*l.* 15*s.*, reversion in 18½ to 18½ yrs. 1,770

Hudson-rd., f.g. rents 113*l.* 17*s.*, reversion in 19½ to 41½ yrs. 4,830

Vicarage-rd. "Bramblebury Arms" b-h., f., rental 60*l.*, reversion in 15½ yrs. 1,500

Vicarage-rd., f.g. rents 46*l.* 10*s.*, reversion in 20½ to 26 yrs. 1,870

Raglan-rd, f.g.r. 25*l.* 16*s.*, reversion in 20½ to 27½ yrs. 1,050

Hudson-rd., etc., f.g. rents 48*l.* 5*s.* 3*d.*, reversion in 20½ to 43 yrs. 1,660

Lee st., f.g. rents, 34*l.* 7*s.*, reversion in 21 to 39½ yrs. 1,350

St. Margaret's-ter., f.g. rents 38*l.* reversion in 40½ yrs. 1,310

Burrage-rd., f.g. rents 95*l.* 12*s.* 8*d.*, reversion in 17 to 28½ yrs. 4,330

Plumstead Common-rd., f.g.r. 16*l.* 13*s.* 4*d.*, reversion in 55 yrs. 500

By P. WONTNER SMITH (at Mitcham).

Mitcham, Surrey.—Church-rd., "Box Cottage" and plot of land, f., w.r. 28*l.* 350

November 16.—By BELLAMY & CO.

Poplar.—34, Lion-st., f., w.r. 23*l.* 8*s.* 200

By J. G. DEAN & CO.

Balham.—50, Fernlea-rd., u.t. 59½ yrs., g.r. 7*l.* 7*s.*, w.r. 53*l.* 6*s.* 250

By HIGGINS & SON.

St. John's Wood.—14, Blenheim-ter., u.t. 38 yrs., g.r. 12*l.*, y.r. 60*l.* 320

By GEO. JOSLIN.

Westbourne Park.—19, Walterton-rd., u.t. 57 yrs., g.r. 10*l.*, e.r. 50*l.* 565

21, Barnsdale-rd., u.t. 57 yrs., g.r. 8*l.*, y.r. 53*l.* 500

25, Southam-st., u.t. 60 yrs., g.r. 7*l.* 10*s.*, w.r. 67*l.* 12*s.* 305

By C. C. & T. MOORE.

Forest Gate.—112, Claremont-rd., u.t. 83 yrs., g.r. 6*l.*, y.r. 34*l.* 365

By STIMSON & SONS.

Hackney Wick.—Wick-rd., The "White Lion" p.h., etc., f.g.r. 110*l.*, reversion in 51 yrs. .. 2,420

Crouch Hill.—No. 45, u.t. 69 yrs., g.r. 7*l.* 10*s.*, e.r. 45*l.* 425

Battersea.—86 and 88, Orbel-st., u.t. 72 yrs., g.r. 13*l.*, w.r. 89*l.* 14*s.* 600

21, 23, and 29, Henning-st., u.t. 72 yrs., g.r. 18*l.* 10*s.*, w.r. 139*l.* 2*s.* 950

Clapham.—2, Carlton-mansions, u.t. 69½ yrs., g.r. 19*l.*, y.r. 75*l.* 600

Camberwell.—15, Rust-sq., u.t. 52 yrs., g.r. 6*l.* 6*s.*, w.r. 46*l.* 16*s.* 250

Peckham.—365, Queen's-rd., u.t. 36 yrs., g.r. 6*l.*, e.r. 50*l.* 295

New Cross.—104, Pepys-rd., u.t. 60½ yrs., g.r. 6*l.* 7*s.*, y.r. 38*l.* 460

Mitcham, Surrey.—7 to 12, Portland-rd., f., w.r. 117*l.* 1,000

1A to 6A, Seaton-rd., f., w.r. 126*l.* 2*s.* 1,000

Morden, Surrey.—7, 8, and 9, Stoneleigh-cottages, f., w.r. 70*l.* 4*s.* 710

By H. J. BLISS & SONS.

Leytonstone.—47, Poppleton-rd., f., y.r. 36*l.* .. 500

Hackney.—27, Aspland-gr., u.t. 50 yrs., g.r. 4*l.* 15*s.*, w.r. 41*l.* 12*s.* 265

Bethnal Green.—10 to 20 (even), Usk-st., f., w.r. 128*l.* 14*s.* 1,340

Hoxton.—Nicholas-st., f.g.r. 38*l.*, reversion in 3 yrs. 3,130

Hackney.—26 to 31, and 59 to 63, Palace-rd., u.t. 50 yrs., g.r. 33*l.* 18*s.*, w.r. 250*l.* 18*s.* 1,375

By ROOTES & WINTLE (at Ross).

Ruardean, Glos.—Knights Hill Farm House and 7 a. 3 r. 1 p., f. £385

November 17.—By ELLIS & SON.

Barnsbury.—88 and 90, Richmond-rd. (s), area nearly 4,500 ft., f., y.r. 48*l.* 810

By GILBERT & HOW.

Finsbury Park.—321, Green-lanes, u.t. 51 yrs., g.r. 12*l.* 12*s.*, p. 750

Dalston.—16 and 17, Laurel-st., u.t. 17 yrs., g.r. 12*l.*, y.r. 56*l.* 255

Holloway.—25, Williamson-st., u.t. 40 yrs., g.r. 5*l.*, w.r. 41*l.* 12*s.* 300

25 and 27, Rupert-rd., u.t. 60 yrs., g.r. 10*l.*, w.r. 88*l.* 8*s.* 500

Dalston.—11 and 13, Shrubland-gr., u.t. 12½ yrs., g.r. 10*l.*, y.r. 58*l.* 225

54, Malvern-rd., u.t. 40½ yrs., g.r. 6*l.* 5*s.*, y.r. 38*l.* 345

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; g.r. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

MEETINGS.

SATURDAY, NOVEMBER 25.

Royal Sanitary Institute.—A provincial sessional meeting in the Council Chamber, Town Hall, Hastings. A discussion will be opened on "Water Filtration—The Health Aspect," by Mr. A. Scarlyn Wilson, D.P.H., M.O.H.; "Pressure Filters," by Mr. Philip H. Palmer, M.Inst.C.E.; and "The Chemical Aspect," by Mr. H. F. Cheshire, B.Sc., F.I.C.

MONDAY, NOVEMBER 27.

London Institution.—Sir Charles Eliot, K.C.M.G., on "The Upper Nile," illustrated. 5 p.m.

Society of Arts (Cantor Lectures).—Dr. J. A. Fleming, F.R.S., on "The Measurement of High Frequency Currents and Electric Waves," I. 8 p.m.

Surveyors' Institution.—Discussion on Paper by Mr. J. D. Wallis, entitled "The Licensing Act, 1904: with Special Reference to the Questions of Compensation and Monopoly Value." 8 p.m.

TUESDAY, NOVEMBER 28.

Institution of Civil Engineers.—Further discussion on Mr. J. A. Saner's Paper on "Waterways in Great Britain." 8 p.m.

WEDNESDAY, NOVEMBER 29.

Edinburgh Architectural Association (Associates' Meeting).—Mr. T. Hadden on "Wrought-Iron Work"—a practical demonstration. 8 p.m.

Society of Arts.—Sir W. H. Preece, K.C.B., on "The British Association in South Africa." 8 p.m.

FRIDAY, DECEMBER 1.

Architectural Association.—Mr. E. F. Reynolds on "Turkish Architecture," illustrated with lantern views. 7.30 p.m.

Institution of Civil Engineers (Students' Meeting).—Mr. W. L. Jenkins on "An Installation for the Bacterial Treatment of Sewage at Neath." 8 p.m.

TERMS OF SUBSCRIPTION.

"THE BUILDER" (Published Weekly) is supplied DIRECT from the Office to residents in any part of the United Kingdom at the rate of 19s. per annum (52 numbers) PREPAID. To all parts of Europe, America, Australia, New Zealand, India, China, Ceylon, etc., 28s. per annum.

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PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£	s.	d.			
Hard Stocks	1	7	0	per 1000	alongside, in river.	
Rough Stocks and Grizzles	1	4	0	,,	,,	,,
Facing Stocks	2	0	0	,,	,,	,,
Shippers	2	0	0	,,	,,	,,
Flettons	1	5	6	,,	at railway depôt.	
Red Wire Cuts	1	11	0	,,	,,	,,
Best Fareham Red	3	12	0	,,	,,	,,
Best Red Pressed Ruabon Facing	5	0	0	,,	,,	,,
Best Blue Pressed Staffordshire	4	1	0	,,	,,	,,
Do. Bullnose	4	6	6	,,	,,	,,
Best Stourbridge Fire Bricks	3	15	6	,,	,,	,,
GLAZED BRICKS.						
Best White and Ivory Glazed Stretchers	12	0	0	,,	,,	,,
Headers	11	0	0	,,	,,	,,
Quoins, Bullnose, and Flats	16	0	0	,,	,,	,,
Double Stretchers	19	0	0	,,	,,	,,
Double Headers	16	0	0	,,	,,	,,
One Side and two Ends	19	0	0	,,	,,	,,
Two Sides and one End	20	0	0	,,	,,	,,
Splays, Chamferred, Squints	20	0	0	,,	,,	,,
Best Dipped Salt Glazed Stretchers, and Header	12	0	0	,,	,,	,,

BRICKS, &c. (*continued*).

	£	s.	d.			
GLAZED BRICKS—*Continued.*						
Quoins, Bullnose, and Flats	14	0	0	per 1000	at railway depôt.	
Double Stretchers	15	0	0	,,	,,	,,
Double Headers	14	0	0	,,	,,	,,
One Side and two Ends	15	0	0	,,	,,	,,
Two Sides and one End	15	0	0	,,	,,	,,
Splays, Chamferred, Squints	14	0	0	,,	,,	,,
Second Quality White and Dipped Salt Glazed	2	0	0	,,	less than best.	

	s.	d.		
Thames and Pit Sand	6	9	per yard,	delivered.
Thames Ballast	5	3	,,	,,
Best Portland Cement	26	0	per ton,	,,
Best Ground Blue Lias Lime	19	0	,,	,,

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly. dpt.

STONE.

	s.	d.		
BATH STONE—delivered on road waggons, Paddington Depôt	1	6½	per ft. cube.	
Do. do. delivered on road waggons, Nine Elms Depôt	1	8½	,,	,,
PORTLAND STONE (20 ft. average)—Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	1	,,	,,
White Basebed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	2½	,,	,,

	s.	d.		
Ancaster in blocks	1	10	per ft. cube,	deld. rly. depôt.
Beer ,,	1	6	,,	,,
Greenshill ,,	1	10	,,	,,
Darley Dale in blocks	2	4	,,	,,
Red Corsehill ,,	2	2	,,	,,
Closeburn Red Freestone	2	0	,,	,,
Red Mansfield ,,	2	4	,,	,,
YORK STONE—*Robin Hood Quality.*				
Scappled random blocks.	2	10	,,	,,
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	3	per ft. super.,	,,
6 in. rubbed two sides ditto, ditto	2	6	,,	,,
3 in. sawn two sides slabs (random sizes)	0	11½	,,	,,
2 in. to 2½ in. sawn one side slabs (random sizes)	0	7½	,,	,,
1½ in. to 2 in. ditto, ditto	0	6	,,	,,
HARD YORK—				
Scappled random blocks.	3	0	per ft. cube,	,,
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	8	per ft. super.,	,,
6 in. rubbed two sides ditto	3	0	,,	,,
3 in. sawn two sides slabs (random sizes)	1	2	,,	,,
2 in. self-faced random flags	0	5	,,	,,

	s.	d.		
Hopton Wood (Hard Bed) in blocks	2	0	per ft. cube,	deld. rly. depôt.
,, ,, ,, 6 in. sawn both sides landings	2	7	per ft. super.	deld. rly. depôt.
,, ,, ,, 3 in. sawn both sides random slabs	1	0	,,	,,
,, ,, ,, 2 in. do.	0	8½	,,	,,

SLATES.

In.	In.	£	s.	d.		
20	10 best blue Bangor	13	2	6	per 1000 of 1200	at r. d.
20	12 ,, ,,	13	17	6	,,	,,
20	10 first quality ,,	13	0	0	,,	,,
20	12 ,, ,,	13	15	0	,,	,,
16	8 ,, ,,	7	5	0	,,	,,
20	10 best blue Portmadoc	12	12	6	,,	,,
16	8 ,, ,,	6	12	6	,,	,,
20	10 best Eureka unfading green	15	17	6	,,	,,
20	12 ,, ,,	18	7	6	,,	,,
18	10 ,, ,,	13	5	0	,,	,,
16	8 ,, ,,	10	5	0	,,	,,
20	10 permanent green	11	12	6	,,	,,
18	10 ,, ,,	9	12	6	,,	,,
16	8 ,, ,,	6	12	6	,,	,,

TILES.

	s.	d.		
Best plain red roofing tiles	42	0	per 1000	at rly. depôt.
Hip and Valley tiles	3	7	per doz.	,,
Best Broseley tiles	50	0	per 1000	,,
Do. Ornamental tiles	52	6	,,	,,
Hip and Valley tiles	4	0	per doz.	,,
Best Ruabon red, brown, or brindled do. (Edwards)	57	6	per 1000	,,
Do. Ornamental do.	60	0	,,	,,
Hip tiles	4	0	per doz.	,,
Valley tiles	3	0	,,	,,
Best Red or Mottled Staffordshire do. (Peakes)	51	9	per 1000	,,
Do. Ornamental do.	54	6	,,	,,
Hip tiles	4	1	per doz.	,,
Valley tiles	3	8	,,	,,
Best "Rosemary" brand plain tiles	48	0	per 1000	,,
Best Ornamental tiles	50	0	,,	,,
Hip tiles	4	0	per doz.	,,
Valley tiles	3	8	,,	,,
Best "Hartshill" brand plain tiles, sand-faced	50	0	per 1000	,,
Do. pressed	47	6	,,	,,
Do. Ornamental do.	50	0	,,	,,
Hip tiles	4	0	per doz.	,,
Valley tiles	3	6	,,	,,

PRICES CURRENT.—*Continued on page 574.*

CONTRACTS AND PUBLIC APPOINTMENTS.

(For some Contracts, etc., still open, but not included in this List, see previous issues.)

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, etc., supplied by	Tenders to be delivered
*MAK.-UP MUSCATEL-PL. AND COPELAND-AV...	Borough of Camberwell	Borough Engineer, Town Hall, Peckham, S.E.	Nov. 27
Metals	Southern Mahratta Railway Co.	E. Z. Thornton, Sec., 46, Queen Anne's-gate, London, S.W.	Nov. 28
Street-making	Gateshead Corporation	N. P. Pattinson, Borough Engineer, Town Hall, Gateshead	do.
Piping, Wrought Iron	East India Railway Co.	C. W. Young, Sec., Nicholas-lane, London, E.C.	Nov. 29
Belting (Leather), Hides, etc.	do.	do.	do.
Tubes, Copper and Brass	do.	do.	do.
Boilers, Two Lancashire, at Public Baths	Burton-on-Trent Corporation	G. T. Lynam, Borough Engineer, Town Hall, Burton	do.
Drainage Works, Winton	Bournemouth Corporation	F. W. Lacey, Boro' Engr., & Sur., Municipal Offices, Bournemouth	do.
Church Mission, Dulnam Bridge, N.B.		Mr. Campbell, Royal Bank, Grantown-on-Spey, N.B.	do.
Wiring of Higher-Grade School for Girls, Victoria-st.	Salford Corporation	Boro' Elec. Engineer, Electricity Works, Frederick-rd., Pendleton	Nov. 30
Police and Fire Station at Prince Rock, Plymouth	Plymouth Corporation	J. Paton, Borough Engineer, Plymouth	do.
Engineering Stores	Cadbury Bros., Ltd.	Cadbury Bros., Bournville, Birmingham	do.
Concreting and Granite Sett Paving, Anchor-road	Longton Town Council	J. W. Wardle, Borough Surveyor, Court House, Longton, Staffs.	do.
Police & Fire Stas., District, Saunders-st., Stockbridge	Edinburgh Corporation	R. Morham, Public Works Office, City-chambers, Edinburgh	do.
Sewers, Instow, Barnstaple	Barnstaple R.D.C.	A. Thorne, The Square, Barnstaple	do.
*GOODS-SHED, ETC., AT PONTARDAWE	Midland Railway Co.	Engineer's Office, Derby Station	do.
House, Manager's, near Maes-y-coed, Pontypridd	Great Western Colliery Co., Ltd.	A. O. Evans, Williams, & Evans, Architects, Pontypridd	Dec. 1
Sewer (700 yds. in length)	Hull Corporation	A. E. White, City Engineer, Town Hall, Hull	do.
Stores	Bradford Corporation	Tramway Offices, 15, Bridge-street, Bradford	Dec. 2
Stores	North-Eastern Railway Co.	E. H. Clark, Stores, Gateshead	do.
Telegraph Stores	do.	C. H. Ellison, Telegraph Superintendent, York	do.
Cloak., etc., Kaye's Sch., Clayton W., nr. Huddersfield	West Riding Education Committee	J. Vickers-Edwards, County Architect, County Hall, Wakefield	do.
Pipes (720 yds. 12-in. & 2,000 yds. of 9-in. c.-i. socket)	Herts and Essex Waterworks Co.	T. & C. Hawksley, Engineer, 30, Gt. George-st., Westminster, S.W.	do.
Hydrant Mains Exten., etc., Workhse., Southampton	South Stoneham Guardians	Mitchell, Son, & Gutteridge, Survs., 9, Portland-st., Southampton	do.
Cemetery Extension, Willesborough	Parish Council	T. H. Wilde, Surveyor, Willesborough, Kent	do.
School Cloakroom, Finningley, Doncaster	The Managers	Rev. Dr. Lewis, Finningley Rectory, Doncaster	do.
Reservoir, Covered Service, at Thorpe	Rothwell U.D.C.	W. E. Richardson, Rothwell, near Leeds	Dec. 4
Roadworks, Bushwood-road, Forest-road, & Maze-road	Richmond (Surrey) Town Council	J. H. Brierley, Borough Surveyor, Town Hall, Richmond, Surrey	do.
Causewaying Mill-street and Kinnoull-street, Perth	Perth Town Council	R. M'Killop, Burgh Surveyor, Tay-street, Perth	do.
Painting, etc., Town Clerk's Office, Fisher-street	Carlisle Corporation	H. C. Marks, City Engineer, 36, Fisher-street, Carlisle	do.
School (Infants' Depart., Hanson Sch., Barkerend-rd.)	Bradford Education Committee	Architect's Department, Education Offices, Manor-row, Bradford	do.
Road Materials, etc.	Norwich Corporation	A. E. Collins, City Engineer, Guildhall, Norwich	do.
School Repairs and Asphalt Paving, Marley-hill	Durham Education Authority	W. Rushworth, Architect County Education Offices, Durham	Dec. 5
Latrines, Tanfield Lea Council School	do.	do.	do.
Conversion of Earth Closets into Water Closets	do.	do.	do.
Ventilation of Washington Colliery School	do.	do.	do.
Road Metal	Elgin County Council	A. Hogg, County Road Surveyor, 24, Academy-street, Elgin, N.B.	do.
Sewerage, Heath End-road	Nuneaton & Chilvers Coton U.D.C.	F. C. Cook, Engineer, Council Offices, Nuneaton	do.
Roadworks	Woodford U.D.C.	W. Farrington, Surveyor, Council Offices, Woodford Green	do.
Pipes (470 tons of c.-i., 3 to 12 in. in diameter)	Edinburgh and District Water Trust	Superintendent of Work's Office, 12, St. Giles-street, Edinburgh	do.
Sewerage Works, Coniston	Ulverston R.D.C.	Engineer, Town Hall, Ulverston	do.
Alterations to Property, South-street, Egremont		J. Cowan, Town Hall, Egremont, Cumberland	do.
*SLUICE GATES (73)	Willesden District Council	Council's Engineer, Public Offices, Dyne-road, Kilburn, N.W.	do.
Fireproof Safe in Clerk's Office	North Dublin Guardians	J. O'Neill, Clerk, Boardroom, North Brunswick-street, Dublin	Dec. 6
Railway Coal Wagons	Lytham U.D.C. Gas Committee	C. A. Myers, Clerk, Lytham	do.
*MAKING-UP CARRIAGEWAY OF FINLAY-ST.	Fulham Borough Council	Borough Surveyor, Town Hall, Fulham, S.W.	do.
Repairs, etc., to Property in the Park, etc., Lincoln	Mr. J. Mackinder	Tweed, Stephen, & Co., Saltergate, Lincoln	Dec. 7
Tender Chns. for Lock of Rl. Edwd. Dock, Avonmouth	Bristol Docks Committee	W. W. Squire, Engineer, Cumberland-road, Bristol	do.
Street Improvement, Dinas	Rhondda U.D.C.	W. J. Jones, Engineer & Surveyor, Public Offices, Pentre, Rhondda	do.
*NEW SORTING OFFICE, PECKHAM	H.M. Office of Works	H.M. Office of Works, Storey's Gate, Westminster, S.W.	Dec. 8
*SUPPLIES FOR TWELVE MONTHS	Guy's Hospital	Superintendent, Guy's Hospital, S.E.	do.
Pumping Machinery in Connexion with Waterworks	Basingstoke Corporation	F. Reginald Phipps, Waterworks Engineer, Town Hall, Basingstoke	Dec. 11
Painting Market Hall	Birkenhead Corporation	C. Brownridge, Boro' Engineer & Surveyor, Town Hall, Birkenhead	do.
*MAGISTRATES' COURTS, ACTON	Middlesex C.C.	County Architect, Middlesex Guildhall, Westminster, S.W.	do.
*ADDITION, ETC., TOWN HALL, BRENTFORD	do.	do.	do.
*CON. COV. WAY, ETC., AT BARMING HTH. ASY.	Kent County Asylums Committee	W. J. Jennings, Architect, 4, St. Margaret's-street, Canterbury	do.
Culv., Ferro-Con., Ouseburn Val. (Hennibique Patent)	Newcastle-on-Tyne Corporation	City Engineer's Office, Town Hall, Newcastle-on-Tyne	Dec. 12
*REPAINT. ENG. HSE., CROSSNESS OUTFL. WKS.	London C.C.	Council's Chief Engineer, County Hall, Spring-gardens, S.W.	do.
Stores, etc.	Dublin Port and Docks Board	N. Proud, Sec., Port and Docks Office, Westmoreland-street, Dublin	Dec. 13
Stores	South Oxfordshire Water and Gas Co.	F. C. Robus, Secretary, 20, Bucklersbury, London, E.C.	Dec. 15
*PUBLIC CONVENI., BROMLEY RECREA. GRD.	London C.C.	Superintendent, Architect's Department, 15, Pall Mall East, S.W.	do.
Sewerage Disposal for Keswick	Keswick U.D.C.	D. Balfour & Son, Engin., 3, St. Nicholas-bldgs., Newcastle-on-Tyne	Dec. 16
Road Materials	Kent Bridges and Roads Committee	County Surveyor, Maidstone	do.
Room for Laundry, etc., at Bungay Council School	East Suffolk County Education Com.	A. Pells, Architect, Beccles	Jan. 9
Coaches, 24 Pilgrim Bogie	Barsi Light Railway Co., Ltd.	E. R. Calthrop, Engineer, 3, Crosby-square, London, E.C.	No date.
Coaches, Composite	do.	do.	do.
Residence, Graham-road, Sheffield	Staffs C.C. Education Committee	G. Malam Wilson, Architect and Surveyor, 37, Surrey-st., Sheffield	do.
*NEW COUNCIL SCHOOL, DARLASTON	.....	Graham Balfour, Stafford	do.
House, Small Detached, Liverpool	.....	Mines & Sutherland, Ltd., 65, South John-street, Liverpool	do.
Additions to Premises, Canton, Cardiff	.....	E. G. C. Down, Architect and Surveyor, 31, High-street, Cardiff	do.
Drainage, Surface-water, Falmouth	.....	W. H. Tresidder, Borough Surveyor, Falmouth	do.
*TWELVE MAISONETTES AT NORWOOD	.....	Philip Stock, Surveyor, 349, Coldharbour-lane, Brixton, S.W.	do.
*SCHOOL AT PARKHURST-ROAD	Tottenham Education Committee	G. E. T. Laurence, Architect, 22, Buckingham-street, Adelphi, W.C.	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in
*THIRD ASSISTANT DRAUGHTSMAN	Metropolitan Borough of Stepney	140*l.* per annum	Nov. 27
*SURVEYOR AND INSPECTOR OF NUISANCES	Hale U.D.C.	165*l.*	Dec. 6

Those marked with an asterisk (*) are advertised in this number. *Competitions*, —. *Contracts*, iv. vi. viii. x. *Public Appointments*, xvi.

PRICES CURRENT.—*Continued from page 573.*

WOOD.

Building Wood.	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	13 10 0	... 15 0 0
Deals: best 3 by 9	13 0 0	... 14 0 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 0 0	... 12 0
Battens: best 2½ by 6 and 3 by 6	0 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less than best.
Battens: seconds	0 10 0	,, ,,
2 in. by 4 in. and 2 in. by 6 in.	9 0 0	... 10 0 0
2 in. by 4½ in. and 2 in. by 5 in.	8 10 0	... 9 10 0

Foreign Sawn Boards—	£ s. d.	£ s. d.
1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.
¾ in.	1 0 0	,,

Fir timber:	At per load of 50 ft.	
best middling Danzig or Memel (average specification)	4 10 0	... 5 0 0
Seconds	4 0 0	... 4 10 0
Small timber (8 in. to 10 in.)	3 12 6	... 3 15 0
Small timber (6 in. to 8 in.)	3 0 0	... 3 10 0
Swedish balks	2 10 0	... 3 0 0
Pitch-pine timber (30 ft. average)	3 5 0	... 3 15 0

Joiners' Wood.	At per standard. £ s. d.	£ s. d.
White Sea: first yellow deals, 3 in. by 11 in.	24 0 0	... 25 0 0
3 in. by 9 in.	22 0 0	... 23 0 0
Battens, 2½ in. and 3 in. by 7 in.	16 10 0	... 18 0 0
Second yellow deals, 3 in. by 11 in.	18 10 0	... 20 0 0
,, ,, 3 in. by 9 in.	17 10 0	... 19 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	... 14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.	13 10 0	... 15 0 0
Battens, 2½ in. and 3 in. by 7 in.	11 0 0	... 12 0 0

WOOD (continued).

JOINERS' WOOD (continued)—	At per standard. £ s. d.		£ s. d.		Tenders to be delivered
Petersburg: first yellow deals, 3 in. by 11 in.	21 0 0		22 10 0		Nov. 27
Do. 3 in. by 9 in.	18 0 0		19 10 0		Nov. 28
Battens	13 10 0		15 0 0		do.
Second yellow deals, 3in. by 11in.	16 0 0		17 0 0		Nov. 29
Do. 3 in. by 9 in.	14 10 0		16 0 0		do.
Battens	11 0 0		12 10 0		do.
Third yellow deals, 3 in. by 11 in.	13 0 0		14 0 0		do.
Do. 3 in. by 9 in.	12 10 0		14 0 0		do.
Battens	10 0 0		11 0 0		do.
White Sea and Petersburg—					
First white deals, 3 in. by 11 in.	14 10 0		15 10 0		Nov. 30
,, ,, 3 in. by 9 in.	13 10 0		14 10 0		do.
Battens	11 0 0		12 0 0		do.
Second white deals, 3 in. by 11 in.	13 10 0		14 10 0		do.
,, ,, 3 in. by 9 in.	12 10 0		13 10 0		do.
,, ,, battens	10 0 0		11 0 0		do.
Pitch-pine: deals	16 10 0		20 0 0		do.
Under 2 in. thick extra	0 10 0		1 0 0		do.
Yellow Pine—First, regular sizes	44 0 0		upwards.		Dec. 1
Oddments	32 0 0		,,		do.
Seconds, regular sizes	33 0 0		,,		Dec. 2
Yellow Pine oddments	28 0 0		,,		do.
Kauri Pine—Planks, per ft. cube	0 3 6		0 5 0		do.
Danzig and Stettin Oak Logs—					do.
Large, per ft. cube	0 3 0		0 3 6		do.
Small ,, ,,	0 2 6		0 2 9		do.
Wainscot Oak Logs, per ft. cube	0 5 0		0 5 6		do.
Dry Wainscot Oak, per ft. sup. as inch	0 0 8		0 0 9		Dec. 4
½ in. do. do	0 0 7		—		do.
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0 0 9		0 1 0		do.
Selected, Figury, per ft. super. as inch	0 1 6		0 2 6		do.
Dry Walnut, American, per ft. super. as inch	0 0 10		0 1 0		do.
Teak, per load	17 0 0		22 0 0		do.
American Whitewood Planks, per ft. cube	0 4 0		0 5 0		do.
Prepared Flooring, etc.—	Per square.				do.
1 in. by 7 in. yellow, planed and shot	0 13 6		0 17 6		Dec. 5
1 in. by 7 in. yellow, planed and matched	0 14 0		0 18 0		do.
1¼ in. by 7 in. yellow, planed and matched	0 16 0		1 0 0		do.
1 in. by 7 in. white, planed and shot	0 12 0		0 14 6		do.
1 in. by 7 in. white, planed and matched	0 12 6		0 15 0		do.
1¼ in. by 7 in. white, planed and matched	0 15 0		0 16 6		do.
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0		0 13 6		do.
1 in. by 7 in. ,, ,,	0 14 0		0 18 0		do.
¾ in. by 7 in. white ,, ,,	0 10 0		0 11 6		do.
1 in. by 7 in. ,, ,,	0 12 9		0 15 0		do.
6 in. at 6d. to 9d. per square less than 7 in.					do.
					Dec. 6
					do.
					Dec. 7
					do.
					do.
					Dec. 8
					do.
					Dec. 11
					do.
					do.
					do.
					do.
					Dec. 12
					do.
					Dec. 13
					Dec. 15
					do.
					Dec. 16
					do.
					Jan. 9
					No date.
					do.
					do.
					do.
					do.
					do.
					do.
					do.
					do.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.		£ s. d.		Applications to be in
Rolled Steel Joists, ordinary sections	6 5 0		7 0 0		Nov. 27
Compound Girders, ordinary sections	7 15 0		8 15 0		Dec. 6
Steel Compound Stanchions	9 7 6		10 17 6		
Angles, Tees, and Channels, ordinary sections	7 15 0		8 15 0		
Flitch Plates	8 0 0		8 10 0		
Cast Iron Columns and Stanchions including ordinary patterns	6 17 6		8 0 0		

METALS.

	Per ton, in London. £ s. d.		£ s. d.
IRON—			
Common Bars	8 0 0		8 10 0
Staffordshire Crown Bars, good merchant quality	8 10 0		9 0 0
Staffordshire "Marked Bars"	10 0 0		—
Mild Steel Bars	8 15 0		9 0 0
Hoop Iron, basis price	9 5 0		9 10 0
,, ,, Galvanised	17 0 0		—
(*And upwards, according to size and gauge.)			
Sheet Iron Black—			
Ordinary sizes to 20 g.	9 10 0		—
,, ,, 24 g.	10 10 0		—
,, ,, 26 g.	12 0 0		—
Sheet Iron, Galvanised, flat, ordinary quality—			
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	14 0 0		—
Ordinary sizes to 22 g. and 24 g.	14 10 0		—
,, ,, 26 g.	15 0 0		—
Sheet Iron, Galvanised, flat, best quality—			
Ordinary sizes to 20 g.	17 0 0		—
,, ,, 22 g. and 24 g.	17 10 0		—
,, ,, 26 g.	19 0 0		—
Galvanised Corrugated Sheets—			
Ordinary sizes 6 ft. to 8 ft. 20 g.	13 10 0		—
,, ,, 22 g. and 24 g.	14 0 0		—
,, ,, 26 g.	15 5 0		—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	11 10 0		—
Best Soft Steel Sheets, 22 g. & 24 g.	12 10 0		—
,, ,, 26 g.	14 15 0		—
Cut Nails, 3 in. to 6 in. (Under 3 in., usual trade extras.)	9 10 0		9 15 0

LEAD, &c.

	Per ton, in London. £ s. d.		£ s. d.
LEAD—Sheet, English, 3lb. and up.	18 0 0		—
Pipe in coils	18 10 0		—
Soil pipe	21 0 0		—
Compo pipe	21 0 0		—
ZINC—Sheet—			
Vieille Montagne ton	33 0 0		—
Silesian ,,	32 10 0		—
COPPER—			
Strong Sheet per lb.	0 1 0		—
Thin ,, ,,	0 1 1		—
Copper nails ,,	0 0 11		—
BRASS—			
Strong Sheet ,,	0 0 11		—
Thin ,, ,,	0 1 0		—
TIN—English Ingots ,,	0 1 3½		—
SOLDER—Plumbers' ,,	0 0 7		—
Tinmen's ,,	0 0 9		—
Blowpipe ,,	0 0 10		—

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2¾d. per ft. delivered.
,, fourths	2d. ,, ,,
21 oz. thirds	3¾d. ,, ,,
,, fourths	3d. ,, ,,
26 oz. thirds	4¾d. ,, ,,
,, fourths	3¾d. ,, ,,
32 oz. thirds	5¾d. ,, ,,
,, fourths	5d. ,, ,,
Fluted Sheet, 15 oz.	3¾d. ,, ,,
,, 21 oz.	4¾d. ,, ,,
¼ Hartley's Rolled Plate	2d. ,, ,,
⅛ ,, ,, ,,	2¼d. ,, ,,
¼ ,, ,, ,,	2½d. ,, ,,

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 1 7
,, ,, ,, in barrels	,,	0 1 8
,, ,, ,, in drums	,,	0 1 10
Boiled ,, ,, in pipes	,,	0 1 9
,, ,, ,, in barrels	,,	0 1 10
,, ,, ,, in drums	,,	0 2 0
Turpentine in barrels	,,	0 3 9
,, in drums	,,	0 3 11
Genuine Ground English White Lead	per ton	21 0 0
Red Lead, Dry	,,	20 0 0
Best Linseed Oil Putty	per cwt.	0 6 6
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 0
Fine Elastic Carriage	0 12 6
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
French and Brush Polish	0 10 0

TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples, sent to or left at this office, unless he has specially asked for them.

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All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and not to the Editor.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

ABERDEEN.—For engineering shop and additions to bakery in Berryden-road, for the Northern Co-operative Company. Mr. R. G. Wilson, architect, 181a, Union-street, Aberdeen:—

Mason: G. Hall, Rock Hilton-road ..... } £3,764 1 1
Carpenters: Leslie & Hay, Fraser-road .. }
Plumbers: J. Matthews & Son, Woolmanhill ..... }
Plasterers: J. Scott & Son, John-street .. }
Slaters: A. Adam & Co., Hutcheon-street }
Painter: A. Adam, Hollybank-place .... }
Ironwork: Abernethy & Co., Perry-hill .. }
Making New Roadway: J. Leith, jun., Great Northern-road ..... }

AMBLE (Northumberland).—For erecting ministers' house, Percy-street, for the Trustees of the Primitive Methodist Church. Mr. W. Burton, architect, 69, Queen-street, Amble:—

R. Carse & Son ..	£485 0	R. & G. Brown, Amble*	£460 15
R. C. Brown	473 0		

BECCLES (Suffolk).—For making-up, etc., roads, for the Town Council. Mr. T. O. Cudbird, Borough Surveyor, Beccles. Quantities by Borough Surveyor:—

Boddy & Son	£1,006 0 0	Burgoyne ..	£814 16 3
Church	997 9 6	Johnson, Beccles* ..	705 0 0
King	963 16 0	Edwards ..	676 8 10

[Borough Surveyor's estimate, £713 4 8.]

BONSALL.—Accepted for waterworks, for Bonsall Urban District Council. Mr. Wm. Jaffrey, architect and surveyor, Matlock Bath:—

For Iron Pipes.
Clay Cross Co., Clay Cross £304
For Reservoir.
Alfred Axe, Bonsall 261
Pipe Laying (First Section).
Wm. Walker, Bonsall 147
Pipe Laying (Second Section).
Wm. Kirklands, Matlock 130
Pipe Laying (Third Section).
E. H. Keeling, Matlock 75
Valves and Hydrants.
J. Stones & Co., Deptford 70

CHADDERTON.—For sewers, etc. (Contract No. 13), for the Urban District Council. Messrs. J. Diggle & Son, engineers, Hind Hill-street, Heywood, and Victoria-street, Westminster:—

T. Turner, Heywood, Lancs* £4,035

CHESHAM.—For 704 yds. lineal of 9 in. stoneware pipe sewer in Hempstead-road, for the Urban District Council. Mr. P. C. Dormer, Surveyor and Waterworks Engineer, Council Offices, Chesham:—

H. Williams	£820	J. Mead	£505
Langley Hardy & Johnson	578	F. Osenton	497
W. Y. Green & Co. ..	567	F. G. Rust	494
J. Jackson	553	T. Free & Sons, Maidenhead*	473

[Engineer's estimate, £494.]

COVENTRY.—For extension of enamelling shop, for the Premier Cycle Company. Messrs. Tait & Herbert architects, Leicester and Coventry:—

Kelley & Son	£373 0 0	Garlick's Exors.	£350 0 6
Hancox & Co.	370 0 0	Isaac & Sons	349 11 6

COVENTRY.—For extensions for Messrs. Alfred Herbert, Ltd., machine tool makers. Messrs. Tait & Herbert, architects, Leicester and Coventry:—

New Brass Foundry.

Garlick's Exors...	£828 6	Isaac & Sons	£770 10
Hancox & Co. ..	799 0	Kelley & Son* ..	769 0

New Castings Shed.

E. C. & J. Keay	£633 0 0	Needham & Lowe	£582 0 0
Lattersons	625 0 0	Cort & Cornick*	526 8 6
Russell & Sons..	582 0 0		

Power House Extension.

Garlick's Exors. ..	£290 0	Isaac & Sons	£265 0
Hancox & Co.	286 0	Kelley & Son*	256 7

Entrance Lobby.

Worwood	£190	F. Taylor	£146
Hancox & Co.	177	Kelley & Son*	129

COWPEN.—For tar macadamising Turner-street, and portion of Waterloo-road, for the Urban District Council. Mr. R. Grieves, Surveyor and Engineer, Seaforth-street, Waterloo, Blyth:—

M. D. Young	£690 0 0	J. J. Robson, Newcastle*	£503 2 6
Hadfield & Co.	575 0 0		
G. E. Simpson	517 10 0		

COWPEN.—For 95 tons of 9-in. diameter cast-iron pipes, etc. for the Urban District Council. Mr. R. Grieves, Engineer and Surveyor, Seaforth-street, Waterloo Blyth:—

Birkley Iron Co., Birkley, Co. Durham .. £4 12 6 per ton.

COWPEN.—For laying and jointing about 1,340 lineal yds., of 9-in. cast-iron water-main in Waterloo, for the Cowpen Urban District Council, Blyth. Mr. R. Grieves, Engineer and Surveyor, Seaforth-street, Waterloo, Blyth:—

W. Kennedy ..	£379 13 4	J. Archibald ..	£184 5 6
J. Thompson ..	357 6 8	W. Elliott	167 10 0
A. Best	234 10 0	Elliott & Davidson	100 10 0
J. Robson.....	201 0 0		
J. Lant, Newcastle-on-Tyne*	195 8 4		

ELLON (N.B.).—For additions to dwelling-house and steading on the farm of Auchterellon. Mr. W. Davidson, architect, Ellon:—

Mason: J. Watson, Ellon*	£237 0
Carpenter: W. Auld, Ellon*	345 0
Slaters: W. Gall & Sons, Newburgh, Aberdeenshire*	137 14
Plasterer: R. Moir, Inverurie*	136 19
Plumber: A. Gibb, Ellon*	69 0

ERDINGTON.—For alterations at the laundry of the Workhouse, for the Guardians. Messrs. Cooper Whitwell & Son, architects:—

G. F. Stephens, Wylde Green, Birmingham £141 17

FEATHERSTONE.—For sewerage and drainage works in Station-lane, for the Urban District Council. Mr. F. B. Rothera, Engineer & Surveyor, Council Offices, Featherstone:—

G. Clements, Station-lane, Featherstone £870 0 6

GODALMING.—For private street works, for the Town Council. Mr. J. H. Norris, Borough Surveyor, Municipal Offices, Godalming. Quantities by Borough Surveyor:—

H. Norris.....	£476 11 8	Hewett & Sons, Ltd.	£412 13 4
G. A. Franks ..	453 18 6	Streeter & Co.	375 7 6

[Surveyor's estimate, £470.]

GROSMONT.—For additions and alterations to Council School, for the Managers of the Abergavenny Group of Schools. Mr. A. Swash, architect, Midland Bank-chambers, Newport:—

T. S. Foster‡	£225 0	E. Shaw	£121 10
E. W. Wilks	153 0	H. Phillips	99 10
H. Smith	153 0	L. Parry, Pandy*	89 10

‡ £198 if deferred until the spring.

HALE.—For making up of Broomfield-lane (from Albert-road to Broom-road), for the Urban District Council. Mr. T. Blagburn, Surveyor, Council Offices, Hale:—

S. Hutton	£352 0 0	J. Hamilton & Son.....	£245 0 0
W. Shepherd & Sons	260 10 0	Exors. of T. Barber	218 1 9
F. Mitchell & Son	258 15 0	G. Boyson	207 14 2
M. Naylor & Sons	257 2 3 / 245 4 6	Messrs. Bethell & Sons, Sale* ..	171 4 0

HANDSWORTH.—For the erection of stables, cart sheds, etc., at Perry Barr, for the Urban District Council. Mr. H. Richardson, Surveyor, Council House, Handsworth :—

J. A. Turton	£863	Gowing & Ingram	£791
Whitehouse & Sons	849	Hulbert & Ladbury	787
W. H. Gibbs	835	D. Roberts	757
J. E. Harper	815	W. Jackson	750
E. Garfield	813	H. J. Pitts	733
G. Webb	805	G. E. Jackson, Oldbury*	707
J. Webb	795		

HASTINGS.—For 800 yds. of cast-iron socket pipes, for the Corporation. Mr. P. H. Palmer, Borough Engineer, Town Hall, Hastings :—

The Clay Cross Co., Clay Cross Iron Works, near Chesterfield—

9-in. Pipes at £4 19 2 per ton.
Irregulars at 9 15 0 per ton.

LINCOLN.—For cast-iron pipes and special castings, for the Waterworks Committee. Mr. Neil McK. Barron, C.E., Corporation Offices, Lincoln :—

Sheepbridge C. & I. Co.	£1,658	Clay Cross Co.	£1,385
D. Y. Stewart & Co.	1,569	Staveley C. & I. Co., Chesterfield*	1,320
Holwell Iron Co.	1,525	Stanton Iron Works Co.	811
Cochrane & Co.	1,459		
J. Oakes & Co.	1,409		

LINCOLN.—For the construction of raw-water tank and clear-water tank, alterations to filter beds, etc. (Contract No. 2), for the Waterworks Committee. Mr. Neil McK. Barron, C.E., Corporation Offices, Lincoln :—

W. Underwood & Bro.	£3,447	A. & G. Harris	£4,498
Hibbs & Copeman	5,178	E. Tabor	4,469
Whyte & Co.	4,992	Parker & Sharp	4,456
J. & T. Binns	4,988	O. Wright & Co.	4,273
C. Bell	4,981	H. H. Barry	4,068
G. Lawson	4,917	R. C. Brebner & Co.	4,064
W. Wright & Son	4,778	Castle & Co.	3,740
E. Fotherby & Co.	4,711	G. Mackay & Son, Edinburgh*	3,735
J. & M. Patrick	4,600		

LLANBRADACH.—For paving, curbing, channelling, flagging, sewering, forming, and metalling the following private streets, viz., Central-terrace, Rees-terrace, Ffrwd-terrace, Glenview-terrace, Wingfield Villas, Llanbradach, for the Caerphilly Urban District Council. Mr. A. O. Harpur, Surveyor, Council Offices, Caerphilly :—

Price & Smith	£1,101 8 3	G. Rutter	£902 2 4
T. F. Howells	1,099 2 8	E. Osmond & Sons, Ely, nr. Cardiff*	850 5 4
J. Sutherland	977 0 0		

LONDON.—For the supply of 4½ in. by 1½ in. by 5 in. Jarrah & Karri wood blocks, for the Westminster City Council :—

Improved Wood Pavement Co. £3 9 per 1,000.

LONDON.—For the supply, delivery and erection of twelve steel coal trucks required for use at the Greenwich electricity generating-station, for the London County Council :—

Brush Electrical Engineering Co., Ltd.	£1,596 0
Flavell & Churchill	1,317 0
T. Davies, Ltd.	1,293 12
Hurst, Nelson & Co., Ltd.	1,290 0
Mountain & Gibson, Ltd.	1,254 0
S. J. Claye, Ltd.	1,098 0
Kerr, Stuart, & Co., Ltd., London*	990 0

LONDON.—For thirty-four single-deck steel cars for through tramways route from Aldwych to the "Angel," Islington, for the London County Council :—

For Thirty-four Single-deck Car-bodies.

Hurst, Nelson, & Co., Ltd.	£19,550
Metropolitan Amalgamated Railway Carriage and Wagon Co., Ltd.	16,252
United Electric Car Co., Ltd.	14,790
Brush Electrical Engineering Co., Ltd., Loughborough*	14,773

For Thirty-four Car-trucks.

Peckham Manufacturing Co., U.S.A.	£4,930
Metropolitan Amalgamated Railway Carriage & Wagon Co., Ltd., Birmingham*	4,862
United Electric Car Co., Ltd.	4,420
Mountain & Gibson, Ltd.	4,046
Hurst, Nelson, & Co., Ltd.	3,978
Brush Electrical Engineering Co., Ltd.	3,774

For the Electrical Equipment and Assembly of Thirty-four Single-deck Cars.

Brush Electrical Engineering Co., Ltd.	£11,696
British Thomson-Houston Co., Ltd.‡	11,084
British Thomson-Houston Co., Ltd.§	10,948
Witting, Eborall, & Co., Ltd.	10,693
British Westinghouse Electric & Manufacturing Co., Ltd.	9,996

‡ Alternative Tender. §Not to Specification.

Or alternatively—

For Thirty-four Single-deck Cars Complete.

		Alternative tender.
Dick, Kerr, & Co., Ltd.	£29,325 0	£29,818
British Thomson-Houston Co., Ltd.	28,942 10	£29,376 / £29,631
British Westinghouse Electric and Manufacturing Co., Ltd.‡	£34,170 0	
Hurst, Nelson, & Co., Ltd.	33,694 0	
Brush Electrical Engineering Co., Ltd.	30,243 0	
British Thomson-Houston Co., Ltd.§	28,806 10	

‡ Amended and accepted. § Not to Specification.

MATLOCK BATH.—Accepted for waterworks, for the Matlock Bath and Scarthin Nick Urban District Council. Mr. W. Jaffrey, Engineer, Matlock Bath. Quantities by Engineer :—

Cast-Iron Pipes.

Clay Cross Co., Clay Cross	£209 5 4

Pipe Laying.

J. Walker, Matlock Bath	109 12 6

Pumping Stations.

J. Walker & Son, Wirksworth	509 17 8

Reservoirs.

A. Axe, Bonsall	520 0 0

NITON.—For the erection of new schools at Niton, Isle of Wight, for the Isle of Wight Education Committee :—

Jenkins	£2,196	Hayden	£1,946
Cruth	2,050	A. Sims, Ventor, Isle of Wight*	1,840
Cotton	1,982		
J. Hunt	1,950		

SALE.—For erecting new Springfield Schools, for Sale and Ashton-upon-Mersey District Administrative Sub-Committee for Education. Mr. J. Holt, architect, 9, Albert-square, Manchester. Quantities by Mr. H. H. Brown, Manchester :—

J. E. Dean, Ashton-upon-Mersey, Cheshire* £13,417

[There were nineteen Tenders sent in.]

SOUTHEND-ON-SEA.—For erecting lavatories and shelters on The Leas, for the Corporation. Mr. E. J. Elford, Borough Engineer, Southend. Quantities by Borough Engineer :—

Messrs. W. & B. H. Davey, Southend* £1,192

STRATFORD-ON-AVON.—For the erection of a pair of villa residences, Stratford-on-Avon. Mr. A. H. Callaway, architect and surveyor, Stratford-on-Avon :—

Smallwood & Co.	£1,575 0	Whateley & Son	£1,375 0
Fincher & Co.	1,525 0	E. T. Kennard	1,370 0
Ward & Co.	1,518 0	J. Cox	1,295 0
G. Euston	1,460 0	Price & Sons*	1,185 15

TRALEE (Ireland).—For constructing a County Hall, for Kerry County Council. Mr. Wrenn, architect, 189, Gt. Brunswick-street, Dublin. Quantities by Mr. J. Mackey, 58, Dame-street, Dublin :—

First Section.

Kennedy Bros., Tralee	£5,280

WOODFORD.—For making up Wynndale-road, South Woodford, for the Urban District Council. Mr. W. Farrington, Surveyor, Council Offices, Woodford Green :—

Wisbey & Co.	£1,219 0 11	Griffiths & Co.	£943 15 0
F. Barry	1,215 3 8	Waterhouse & Hanson	940 10 0
Free & Sons	1,164 17 9	French Bros., Buckhurst Hill*	869 16 10
Parsons & Parsons	1,024 4 1		
O. T. Gibbons	999 8 7		
W. Manders	971 6 8		

WOODFORD.—For rearrangement of hot-water system, Claybury Asylum, for the London County Council :—

Strode & Co.	£3,887 0
G. N. Haden & Sons	3,859 0
Newton, Chambers, & Co., Thorncliffe Iron Works, Sheffield*	3,360 0
Ashwell & Nesbit	‡3,312 0 / ‡3,131 0
Lee & Warren, Glenroy Works	2,970 0
Dargue, Griffiths, & Co., Ltd.	2,699 15

‡ Alternative schemes

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